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TRANSACTIONS OF THE SOCIETY.

Monthly Meeting held on January 17th, 1900, Mr. W. A. Luff, President, in the chair.

Mr. A. W. Bristow, Le Mont Durand, St. Martin's, was proposed by Mr. H. Marquand.

Mr. W. A. Luff exhibited and read short notes on *Sympetrum fonscolombii*, a rare Dragon Fly found in Alderney in July last by Mr. E. D. Marquand. The specimen is a fine mature female, which is much rarer than the male. Also notes on *Drilus flavescens*, a small beetle very local in the south of England. The female is three times as large as the male, without wings or wing cases. The larva feeds on several species of land shells living inside the shell. Mr. Luff has not met with it in Guernsey.

Committee Meeting held on January 24th, 1900.

Present: Mr. W. A. Luff in the chair; Messrs. Derrick, De La Mare, Sharp.

It was decided that Mr. Bichard should print 200 copies of the *Transactions* as usual.

Monthly Meeting held on February 21st, 1900, Mr. W. A. Luff, President, in the chair.

The Hon. Secretary announced the receipt of

a. "Annual Report of Smithsonian Institution for 1897."

b. "Transactions of Wisconsin Academy for 1896-97-98."

Mr. Bristow was unanimously elected.

A paper by Cecil Andrews, M.A. (reproduced from the *Journal of Botany*) on "Two Grasses new to the Channel Islands, viz.: *a. Phalaris minor*, Retz., and *b. Milium scabrum*, Merl," was read by Mr. Derrick.

Mr. Luff exhibited and described specimens of *Rhizotrogus æstivius*, *Cryptocephalus rittatus*, var. *Meloë brevicollis*, all found in Alderney in 1899 by Mr. E. D. Marquand.

Monthly Meeting held on March 21st, 1900, Mr. W. A. Luff, President, in the chair.

Mr. W. E. Steinschen was proposed for election.

Mr. Le Lacheur exhibited a portion of a stone cannon ball found by him at the Vauxbelets.

Mr. Luff exhibited larvæ of the Jersey Tiger *(Callimorpha hera)* bred from the egg. He also reported seeing a Brimstone Butterfly on the cliffs near Petit Port on Sunday, 11th inst.

A number of Guernsey names of plants (collected by Mr. Le Lacheur) were read, and a discussion ensued.

Monthly Meeting held on April 25th, 1900, Mr. W. A. Luff, President, in the chair.

Mr. W. E. Steinschen was elected a member of the Society.

Mr. De La Mare reported that a mixture of head and beach had been found 11 feet below the surface at Orangeville, Bouët.

Miss Collings stated that the sand over the above is a shifting sand.

It was reported that the Cuckoo was heard on the 17th instant.

Mr. E. D. Marquand reported the finding of an excessively rare moss in Alderney. For more than 30 years it has been known in only one single locality in the kingdom, and now it is extinct there.

Lists of birds and fishes with their Guernsey names were read and discussed. These had been collected by Mr. Le Lacheur.

Monthly Meeting held on May 16th, 1900, Mr. W. A. Luff, President, in the chair.

The attendance of members was small, and after the official business of the meeting was over, it was decided to discontinue the meetings during the summer months, till October, and arrangements were made for the summer excursions.

Ordinary Meeting held on October 17th, 1900, Mr. W. A. Luff, President, in the chair.

The Hon. Secretary reported the receipt of four works from other scientific societies.

Mr. Luff exhibited a specimen of *Datura stramonium* (Thorn Apple) found in his garden in Burnt Lane. This plant is found occasionally in different parts of the island.

Mr. De La Mare gave particulars of geological work done in Alderney during the excursion to that island on July 5. He also furnished particulars of the cutting for drain at the Vrangue.

Mr. Luff read the report of the Entomological Section, together with a note by Rev. F. E. Lowe of his work with butterflies and moths. They shewed the addition of several new insects to the Alderney list, and one moth *(L. vitellina)*, two beetles and one butterfly *(Papilio machaon)* for Guernsey.

Mr. Collenette exhibited some worms *(Hematomorpha gordius)* intermediate between eel worms and water worms.

Mr. J. B. Nickolls read some most interesting notes on *Bacillus prodigiosus*, which has appeared in two places in Guernsey in recent years. This paper will appear in this *Transactions* of the Society.

Mr. Collenette exhibited a remarkable example of an echinoderm, kindly lent by Captain Lukis, the inside of which was filled with a crystalline quartz.

Monthly Meeting held on November 21st, 1900, Mr. W. A. Luff, President, in the chair.

The Hon. Secretary recorded the receipt of the "Catalogue of British Hymenoptera, Part I.", from the authorities of the British Museum.

Miss D. Slade (proposed by Mr. Collenette), and Miss Wagstaffe (proposed by Miss Foster), for election at next meeting.

Mr. Collenette exhibited a specimen of the Arctic Skua *(Lestris parasiticus)* caught at Delancey Park, Guernsey, October 3rd, 1900.

Mr. H. Marquand exhibited eggs of Guillemot, in two varieties, and honey barrels and leaves of the Alderney species of the Leaf-cutting Bee *(Megachile maritima)*.

Mr. Hocart exhibited an old halbard or pike, formerly used by the Guernsey Militia.

Mr. Pitts exhibited two weapons made of rhinoceros horn used in one of the Kaffir wars.

Mr. Luff read a "Note on *Papilio machaon*: its abundance in Northern France this summer," by H. Moore, F.E.S.

Mr. Luff then read a paper by the late Fr. Walker, F.L.S., communicated by his son, Rev. Walker, D.D., F.E.S. This was followed by a long discussion.

Seventeenth Annual Meeting held on December 19th, 1900, Mr. W. A. Luff, President, in the chair.

After reading the minutes of last meeting. Miss Slade and Miss Wagstaffe were elected, and Mrs. Foreman was proposed for election.

Mr. Pitts exhibited examples of vegetable fibre and cane dug up in a lagoon in Florida by Colonel Durnford, and lent by that gentleman.

Mr. Collenette exhibited a mass of "grit" found between four and five feet below the surface embedded in clay at the property of Mr. P. Domaille, in Rue Poudreuse. The stone is foreign to the island, and bears evidence of having been worked into a hollow curve on one side.

Mr. Luff read a paper on "Additions to Alderney List of Insects."

Mr. Derrick read the report of the Botanical Section, Mr. Luff that of the Entomological Section, and Mr. De La Mare gave a brief recapitulation of the work of the Geological Section.

Mr. Pitts announced that the MSS of the late Sir Edgar MacCulloch on "Guernsey Folk-lore" would soon be published.

SEVENTEENTH ANNUAL REPORT.

LADIES AND GENTLEMEN,

In presenting their Seventeenth Annual Report your Council is pleased to note that there has been no serious diminution in the membership of the Society, which now stands at 93. Four new members have been added during the year. Eight indoor meetings have been held; these meetings were suspended during the summer months, when the attendance has been generally very meagre. Five outdoor meetings were organised, viz.: To Corbière Point, Alderney, Claire Mare and neighbourhood, Sark and Jethou. The two latter had, however, to be abandoned for various reasons. The reports of the Sectional Secretaries will record in detail the work done during the year, which in many particulars is very gratifying.

The following papers have been read during the year :—

"Bacillus Prodigiosus," by Mr. J. B. Nickolls.
"Two Grasses new to the Channel Islands," by Mr. Cecil Andrews, M.A.
"Notes on the Insects of Guernsey and Sark," by the late F. R. Walker, F.L.S.
"Additions to the List of Alderney Insects," by Mr. W. A. Luff.
"The Sunshine and Rainfall of Guernsey for 1900," by Mr. A. Collenette, F.C.S.

Many very interesting notes on different branches of natural science have also been read during the year by different members. We still deplore, however, that the rich marine fauna of the bailiwick remains unworked.

During the year the following publications have been received, for which the Council returns best thanks :—

1.—From the Boston Society of Natural History :—
a. "The Blood Vessels of the Heart of Carcharias, Raja and Amia."
b. "List of the Marine Mollusca of Coldspring Harbour, Long Island."
c. "The Development of Penilia Schmakeri Richard."
d. "Proceedings of the Annual Meeting, 1899."
e. "Variation and Sexual Selection in Man."
f. "Notes on the Reptiles and Amphibians of Intervale, New Hampshire."
g. "Contributions from the Gray Herbarium of Harvard University, New Series, No. 17."
h. "Studies in Diptera Cyclorhapha."
2.—From the Academy of Natural Science, Philadelphia :—
"Proceedings, 1899, Parts 2 and 3."
"Proceedings, Jan. and Feb., 1900."
3.—From Smithsonian Institution :—
"Annual Report for 1897."
4.—From the Authorities of the British Museum :—
"Catalogue of British Hymenoptera, Part I."
5.—From Wisconsin Academy :—
"Transactions for 1896, 1897 and 1898."
6.—"Bulletin of the Wisconsin Natural History Society, April, 1900."
7.—"Seventeenth Annual Report of Board of Trustees of Public Museum of City of Milwaukee."

In conclusion, the Council wishes to express its cordial thanks to the Trustees of the Guille-Allès Library for the many privileges this Society enjoys from that institution.

WILLIAM SHARP, Hon. Sec.

The retiring President, Mr. W. Luff, read a most interesting address.

Mr. W. Sharp, proposed by Mr. Luff and seconded by Mr. Collenette, was unanimously elected President.

Mr. Derrick was elected Secretary in succession to Mr. Sharp.

Mr. Luff was re-elected Treasurer.

A ballot was held and the following gentlemen elected on the Council for the year :—Messrs. J. L. Pitts, J. S. Hocart, C. G. De La Mare, E. C. Ozanne, F. A. Holiday and H. E. Marquand.

Auditors having been appointed, the accounts were examined and passed.

REPORT OF THE BOTANICAL SECTION.

The Botanical section has to report a few interesting discoveries during the year.

Mr. C. Andrews, M.A., who contributed a paper on Guernsey caves to our last transactions, announced in the *Journal of Botany* for February, 1900, the discovery of two new Guernsey grasses.

Phalaris minor, Reitz. Obs. Bot. iii., 8, 1783, and

Milium scabrum, Merlet de la Boulaye ; Herbor, Maine et Loire, 220, 1809.

He considers both to be natives of the island. *Phalaris minor* resembles *P. canariensis*, and has probably been confused with it. It occurs also in Alderney. It was found in cultivated sandy fields near the sea, and sparingly on the shore. It is not uncommon on the west coast of France.

Milium scabrum is found growing sparingly on the south cliffs of Guernsey, near Petit Bot, on the lower part of the slope; the Guernsey specimens are smaller than the continental forms. These grasses have not been exhibited yet at a meeting of the Society, and we have no specimen in the herbarium.

Another plant of *Datura stramonium* has been noted. It grew in the garden of our president, Mr. W. Luff, in Burnt Lane. Near it sprang up a fine specimen of Henbane *(Hyoscyamus niger)*; it is many years since the last plant of it was noticed in Guernsey.

But the most remarkable and interesting discovery of the year was made by Mr. Le Lacheur, Norgeots. He found a fairly large bed of Asparagus *(A. officinalis)* plentifully

decorated with berries on the cliffs at Pleinmont. Babington gives the species as growing there on the authority of Mr. W. C. Trevelyan, but no member of this Society had previously detected it, and yet it has undoubtedly made there an annual display which, one would have thought, could hardly have escaped observation.

I have also to add two plants to the Flora of Herm, viz., *Mœnchia erecta* and *Veronica arvense*. These were brought me by the late Mr. W. Cumber on April 27th.

Our indefatigable ex-President, Mr. E. Marquand, continues his researches in Alderney with most gratifying success. He has forwarded the following particulars to be incorporated with this year's *Transactions*:—

"I am pleased to be able to report progress in the investigation of the Flora of Alderney. An important addition has been made to the list of Flowering Plants published in last year's *Transactions*, no less than 89 new species having been found during the past twelve months; so that at the present time 503 Flowering Plants are catalogued for the island. Out of this number 36 species, or 7 per cent. of the total, are unknown in Guernsey. The most interesting species discovered this year is a Sea Lavender (*Statice lychnidiflora*) which is not only new to the Channel Islands, but also new to the British Flora. To the Ferns and Fern-allies a few additions have been made, the most noteworthy being the Great Water Horsetail (*Equisetum maximum*) a plant new to these islands.

"During the year I have given special attention to the cryptogamic vegetation of Alderney, about which practically nothing was known, and the results are gratifying. A list of 93 Mosses has been compiled, which is about two-thirds of the number of Guernsey species, though nine of them are not recorded for the larger island. Among these there is a great prize,—*Bartramia stricta*, a moss confined in the British Isles to one small spot in Wales. There is plenty of it in Alderney on one part of the cliffs. Of Hepaticæ 21 species have been found, as well as 115 Lichens and 109 Fungi. During the summer and autumn my wife and I devoted some time to seaweed collecting, and were so fortunate as to discover 156 species, some of them forms of great interest and rarity.

"The total number of cryptogamic plants now catalogued for Alderney, with notes on distribution and comparative frequency, amounts to a little over 500 species, and of these again 7 per cent. have not hitherto been detected in Guernsey. In every section of the flora Alderney differs from the

mother island by the possession of something unique, and in many respects approximates more closely to the continent, as indeed would be expected from its geographical position.

"There are many botanical features of the greatest interest in this little-known island, as there are in each of the other members of the Channel group; but these points will be dealt with in the work I have been engaged upon for over twelve years, and which I hope will be ready for the press in the course of a few weeks. In conclusion, however, I may say that twelve months' further study only confirms the belief I expressed in my former paper, viz.: that, all things considered, Alderney is, from a botanical point of view, unquestionably the most interesting of all the Channel Islands."

G. DERRICK, Sec. Bot. Sect.

REPORT OF THE GEOLOGICAL SECTION.

The Geological Section has availed itself of the opportunities afforded by the extensive excavations carried on for drainage purposes in various parts of the parish of St. Peter-Port, and has noted the composition of the subsoil along the route of such excavations. The results are here recorded.

SUPERFICIAL DEPOSITS.

A.—*Old Beaches, &c.*

1.—At Petit Bouët, near Orangeville, under six feet of yellow earth, a deposit of five feet of sand with water-worn pebbles occurred, the bottom not being reached.

2.—At Grand Bouët a deposit of sand and silt (with a few pebbles) of about a yard in thickness, was found in the depression near Osberta Terrace, connected with the low-lying tract to the north, known as the Marais. This rested on clay, apparently resulting from the decomposition of the under-lying rock. This deposit was also found in Bordage Lane. Although not overlaid by yellow earth or head as is the case with the deposit previously mentioned it probably belongs to the same period. Head occurs on both sides of this deposit, underlaid on the east side by a pebble beach of no great extent, but owing to the slippery and water-logged nature of the silt, it was not possible to make out the exact relation of the various strata.

3.—A deposit of sand under yellow earth occurred opposite Vrangue Brickfield. This sand contained rounded

flint grains up to $\frac{1}{3}$ of an inch in diameter. This would seem to be a marine deposit probably occupying an inlet connected with the Marais depression. It may be noted that the yellow earth in the upper pit at the Brickfield is also underlaid by sand. It does not, however, follow that the pit sand (which lies at a higher level) is connected with or of the same origin as that under the road. The Geological Section has not so far been convinced that the sand in the upper pit is marine.

4.—At the bottom of Guelles Road, an unexpected deposit of sand and pebbles occurred. The sand arose from decomposed rock, but was free from earthy particles and iron stained. Some of the pebbles were five or six inches in diameter, the material being diorite and gneiss. The deposit was about 20 yards long and at least 9 feet deep, and was well stratified. As it was not seen exposed by any member of the Geological section, no positive opinion as to its nature can be given, but from the description given and the appearance of the material, it would seem to be an ancient high level beach. The surface of the deposit was about 74 feet above mean sea level. Various beaches of similar elevation will be found recorded in these *Transactions*.

B.—*Yellow Earth or Sandy Loam.*

This was found in many spots.

1.—At Petit Bouët, between Arculons lane and Orangeville, at least nine feet thick in some places, but lying in irregular pockets. This deposit consisted of sandy and clayey layers alternating.

2.—Opposite Vrangue Brickfield, a deposit of yellow earth was found underlaid by sand as above stated. This deposit seems connected with that in the upper pit of the brickfield.

3.—A pocket ten or twelve feet deep near upper Vrangue mill.

4.—Another similar pocket a little to the east of the dip in Rue des Thomas.

ROCKS.

Outcrops of undecomposed rock occur at Hougue-à-la-Perre, the end of Ivy Castle Lane, the hill near Bouët Post Office and near Caledonia Nursery. The three first belong to the Hornblende gabbro variety, which was also met with in Guelles Road. In all other parts the rock is decomposed, especially in Rozel Road, St. Jacques, Gibauderie, Rocquettes Road, also at Croutes and St. Stephen's Road. The rock is chiefly diorite, of which undecomposed nodules frequently

occur, but veins of coarser syenitic or granitic rock, were met with at Rozel Road, St. Jacques and Gibauderie. No clear indications of gneiss have been noticed in any of the excavations, extending southward as far as the Croutes end of Belmont Road. At Camp Pendart the rock consisting of decomposed diorite intersected by numerous felsite and amorphous diorite veins, is curved into pseudo-strata following the slope of the hill. These, possibly, are connected with the sandy and clayey deposits said to exist in the neighbourhood of the Roussaillerie.

ALDERNEY.

Two visits to this Island were made in the course of the summer. They were spent in measuring the elevation and fixing the position of some old beaches in the eastern part of the Island. One in the diorite quarry, west of Corbelets Bay, was found to be from 77 to 80 feet above mean sea level (an elevation corresponding to that of the highest beaches found in Guernsey). It was overlaid by a sandy deposit. To the east of Corbelets Bay, a beach in a sandstone quarry was found to be 58 feet above mean sea level, and still further east, a third beach was found in a cutting having an elevation of from 45 to 50 feet. In the first of these the pebbles were mixed with angular rubble, indicating perhaps that they had been brought down from a higher level; the others are good typical examples of beaches *in situ*. In the low cliffs forming the eastern extremity of the island, very good sections of old beaches, at an elevation of from 23 to 26 feet above mean sea level, occur. Beaches of a similar elevation occur at many other parts of the coast.

The southern quarry, north of Essex Castle, noted as containing pebbles embedded in the sandstone, was also visited. All the pebbles noticed were of quartz felsite, the structure of some being porphyritic and of others banded. They resembled the rhyolites of the north of Jersey more than they did any local rock so far known to us.

C. G. De La Mare, Sec. Geol. Sect.

REPORT OF THE ENTOMOLOGICAL SECTION.

In presenting the Entomological Report for 1900, I am pleased to say that it has been a very successful season, the fine weather enjoyed during the summer being very favourable to the development and migration of Insects.

Commencing with the butterflies, I have to record, for the first time to my knowledge, in Guernsey, the capture of a fine specimen of that magnificent species, *Papilio Machaon*, the Swallow-tailed Butterfly.

This specimen was captured on Delancey Hill by Dr. Bishop on August 21st. Several others were seen but not captured.

The first to observe the species was the Rev. F. E. Lowe who, whilst at Icart Point on August 13th, engaged in the pleasant occupation of capturing specimens of *Colias Edusa*, was startled at seeing this butterfly. He at once gave chase, but from the uneven nature of the ground was unable to capture it. It was seen again on August 17th, near Saints' Bay, by Mr. Sherring, F.L.S., and others have assured me that they had seen specimens which may or may not have been this species.

I think that there can be no doubt that this insect has migrated from the Continent, as single specimens have been recorded from many places in the South of England this year, and Mr. H. Moore, F.E.S., records its unusual abundance in Northern France.

Lampides bœtica, the Long-tailed Blue, has again appeared in the island, but not in such numbers as last season. The Rev. F. E. Lowe saw a specimen as early as July 24th at flowers of the blue lupin.

During September they were observed and taken in gardens at St. Stephen's Vicarage and Mount Pleasant. It is also interesting to note that Mr. Baker searched its food plant, *Collutea aborescens*, and found a number of the larvæ, from which he was successful in breeding some fine specimens of the perfect insect.

Colias Edusa (the Clouded Yellow) has been exceedingly abundant, and its variety *Helice* has been taken at Moulin Huet Bay, the Ramée, and near the Castel Post Office.

Several specimens of *Colias Hyale* (the Pale Clouded Yellow) have also been taken.

Pyrameis Cardui (the Painted Lady) has been very common, and the Rev. Lowe reports the capture of *Vanessa Io*, the Peacock butterfly, on August 8th and 14th. This is worth noting, as although a common insect in England it is scarce with us.

Mr. Baker informs me that he found a larva of *Zeuzera Æsculi*, the Leopard moth, in the stem of a young apple tree, and which had caused the death of the tree. The Leopard moth is a fine and handsome species, but is terribly

destructive to fruit trees. On enquiry it was found that this tree had been recently imported from England.

The Rev. F. E. Lowe records the capture of no less than seven specimens of *Leucania albipuncta*, a very rare moth, which had only once before been recorded for Guernsey. These were taken at sugar, on various dates between August 2nd and September 17th. I also took two specimens of this species at Grande Mare, Vazon, during August.

Other captures made by Rev. F. E. Lowe, are two *Leucania putrescens*, one on August 24th and the other August 31st. Four *Agrotis lunigera*, August 29th to September 28th. The best capture, however, was a very perfect male specimen of *Leucania vittelina*, a species quite new to the island list. Although it has been commoner in England of late years, it is always considered a great prize. When Newman published his "British Moths," two specimens only had been taken in England, at Brighton.

On looking through some insects captured by Mr. Le Messurier during this season, I was pleased to see two specimens of *Polyphœnis serecina*, a beautiful green Noctua, previously recorded in our Guernsey list but which has not been taken in England. Mr. Baker has taken specimens of *Eupithœcia dodoneata*, which is an addition to the list.

Tortrix pronubana, which is recorded as an addition to our list in the Report for 1898, has been very abundant, and the larvæ have been found feeding on Euonymus. This insect is no doubt a recent arrival on the island, and it is to be hoped that it will not prove a pest, as I received a bunch of grapes from a greenhouse in the country with a number of *tortrix* larvæ feeding on the berries. These were bred and turned out to be our new acquaintance, *T. pronubana*.

Tischera marginata is an addition to the list of Micro-Lepidoptera. *Luffia lapidella*, Goeze, the curious case-making moth, mentioned in the last Report, has been fully described in all its stages in the Second Volume of Mr. Tutt's "Natural History of the British Lepidoptera." He adds the following interesting historical note on the subject. This insect was first noticed by M. De La Voye, who, on August 28, 1666, communicated to the Academie of Sciences (France), a paper on the species. His account of the species is a very satisfactory one, although he considered that the larvæ ate stones. The cases that he described had been fonnd in the Benedictine Abbey of Caen, a locality not very far removed from the Channel Islands, where Mr. Luff has this year (1899) found and reared them so abundantly.

Réaumer corrected and amplified this description in the Mémoires III., pp. 179 et seq., and gave figures of the case, larva and female, Pl. XV., figs 1-6, 17-19. It was afterwards described by Geoffroy (His. des Ins., p. 204), and later named *lichenosa* by him in "Fourcroys," Ent. Paris, p. 336.

Just previous to this, however, Geoze had named the insect *lapidella*, whilst in 1838 Zeller named it *lapidicella*, both the latter authors taking as their types the same bibliographical references to Réaumer and Geoffroy. Duponchel, however, independently described the male insect as *pectinella*, and Guénee averred (Ann. Soc. Ent. France, Second Series, IV., p. 11) that it was the most common *Micro-psychid*, the cases occuring in hundreds, and the imagos entering the rooms even in the middle of Paris. It was Guénee, too, who referred Duponchel's *pectinella* to this species, although he himself adopted Zeller's name, changing its form, however, to *lapidicella*. The male has not yet been bred in Britain, although we refer cases obtained by Bankes in Purbeck, and by Richardson in Portland, hereto, and suspect that the cases obtained by Edelston on an old limestone wall between Conway and Llandudno, as well as Gregson's *Psyche hibernicella*, should also be so referred; but until the male is bred, there must always be the suspicion that the British insect may be *Luffia ferchaulteda* (pomonæ).

In *Coleoptera* I have to add three species to the list.

Monochammus sutor, one of the Longicorn beetles, was taken in Mr. Robilliard's timber yard at the Piette. It is a very rare British species.

Helaerius sesquicornis was captured by Mr. Brockton Tomlin in a room at a house he was lodging in at St. Sampson's. It is a very interesting species, being only found in ants' nests or their neighbourhood. Mr. Tomlin says that there was an ant's nest under the window sill of the room, from which the beetle no doubt came.

Homalium excavatum. Several were taken by Mr. Tomlin at St. Sampson's. Several specimens of that curious Hemipterous insect, *Ranatra linearis*, have been taken in ponds at L'Ancresse. It is recorded in our list as rare.

Two specimens of the rarest of British Saw Flies, *Sirex juvencus*, were brought to me by a workman, having flown into Mr. Frampton's workshop in Victoria Road. It is curious that one of the same species flew into my workshop window in the Bordage at about the same time.

Two additions have been made to the list of Diptera, viz., *Conops quadrifasciatus*, a handsome species, and the little

Pericoma calceata. A number of additional species have been added to the list of Alderney insects.

ADDITIONS TO THE LIST OF THE LEPIDOPTERA OF GUERNSEY.

Papilio machaon, *L.* (The Swallow-tailed Butterfly). One specimen captured by Dr. Bishop on Delancey Hill on August 21st. A specimen seen by Rev. F. E. Lowe, F.E.S., at Icart Point on August 13th, and one by Mr. Sherring, F.L.S., on August 17th, near Saints Bay.

Zeuzera æsculi, *L.* (The Leopard Moth.) A larva of this destructive species was found by Mr. Baker in the stem of a young apple tree which had been recently imported into Guernsey from England.

Leucania vittelina, *H.B.* One specimen taken at sugar by the Rev. F. E. Lowe.

Eupithecia dodoneata, *Gn.* Taken by Mr. Baker.

Tischera marginea, *Hw.* One specimen captured.

Luffia lapidella, *Goeze.* This species was recorded in the list of Guernsey Micro-Lepidoptera under the name of Fumea lapidicella, *Zell.*

ADDITIONS TO THE LIST OF THE COLEOPTERA OF GUERNSEY.

Monochammus sutor, *L.* A specimen taken in Mr. Robilliard's timber yard at the Piette.

Helaerius sesquicornis. One specimen captured by Mr. Brockton Tomlin in a room in a house he was lodging in at St. Sampson's.

Homalium excavatum, *Steph.* Several specimens captured by Mr. Tomlin at St. Sampson's.

ADDITIONS TO THE LIST OF THE DIPTERA OF GUERNSEY.

Conops quadrifasciatus, *Deg.* One specimen taken near Moulin Huet Bay.

Pericoma calceata, *Mg.* Not uncommon.

W. A. LUFF, Sec. Ent. Sect.

PRESIDENTIAL ADDRESS.

BY MR. W. A. LUFF, RETIRING PRESIDENT.

In returning into your hands the important office with which you have entrusted me, I must express to you my sincere gratitude for the kindness with which you have invariably received me, and I shall always remember with pleasure the period during which I have had the honour of presiding over you.

I must congratulate the Society on the completion of the third volume of the *Transactions*. A glance at the indexes will show what a store of information is contained in these three volumes.

Besides numerous articles on the Geology, Meteorology, Antiquities and Folk-lore, we have well authenticated lists of no less than 2,360 species of Plants, and 1,770 species of Insects for the island of Guernsey alone.

During my period of office the most important work brought forward in the *Transactions*, were the lists of the Fauna and Flora of Alderney. These lists are mainly due to the exertions of Mr. E. D. Marquand, our late President. They show how much may be done in a limited area by persistent and skilled research. The list of the flowering plants will be still further extended in Mr. Marquand's work on the "Flora of Guernsey and the lesser Channel Islands," which will be issued from the press in a short time. I hope that as many members as possible will show their appreciation of Mr. Marquand's labours by adding this volume to their libraries.

As some of the sections have been so persistently worked at, that the annual results are, although valuable, small in extent, it behoves us to fly to fresh fields and pastures new.

One of the subjects which we, as a Society, seem to have ignored, is Marine Zoology.

On the shores of these islands we have one of the richest fields for the study of this branch of Natural Science

in the whole of the British Kingdom. In one order of the Crustaceans alone (the Stalk-eyed or superior Crustaceans), Mr. Sinel observes that we have no less than ninety of the approximately one hundred species recorded as found in British Waters. Both Jersey and Guernsey can separately boast of at least 85 of these. In sponges we have about 120 species, and the sea slugs and sea worms number not less than 180 species. In the other classes of marine animals the islands are equally rich.

On looking through some of the Old Natural History periodicals, I was struck by the number of records of rare mollusca which had been gathered on these shores.

Many of these records are due to the labours of the late Dr. Lukis, and I cannot forbear from quoting in this address an extract from "Gwyn Jeffery's British Conchology."

Mr. Jeffery says:—"I cannot resist the opportunity of acknowledging my gratitude for the valuable aid and communications which I continually received from this kind friend for many years and up to the time of his lamented and premature death.

"His gifted mind, varied acquirements, generous nature and great amiability, fascinated all who had the good fortune to know him. He was a true naturalist. These and collectors are too frequently classed together, but there is an essential difference between them. The former loves science for its own sake, and not for the childish pleasure of acquiring many rare species or even an unique specimen. He is never selfish or covetous, his only craving being for the sympathy of others who have the same tastes as himself. The mere collector is generally not so intellectual or estimable. Dr. Lukis exemplified this difference.

The feelings which prompted him to share the discovery above mentioned with a brother naturalist, were doubtless the same as those expressed by the most philosophic of our modern poets in the following lines:—

> 'Often have I sighed to measure
> By myself a lonely pleasure,
> Sighed to think, I read a book
> Only read, perhaps by me!'

"May such characters never be wanting in our land!'"

To those wishing to commence the study of Marine Zoology, I may mention that there is a beautiful collection of more than 600 specimens, all properly named and classified,

in the Museum of the Guille-Allès Library. These were presented to the Museum by the late Curator, Mr. J. Whitehead, in 1889. A list of most of the species is given in our *Transactions* for that year.

I would like to see commenced in our *Transactions*, a Bibliography of all books, papers and records that have been published on the Natural History, physical features, antiquities and Archæology of the Channel Islands. I am sure it would be of the greatest interest and value to anyone working up a particular branch of Local Research. As an instance, a short time ago some specimens of a carnivorous shell-bearing slug were exhibited before the Society, and very few of us knew anything at all about them. Little did we think that as far back as 1834, Mr. F. C. Lukis had written an article, illustrated with drawings, in the "Magazine of Natural History," on this very species. He says that as far back as 1801 it was known to him, being plentiful in his own garden. This gives the record of the species for 100 years, yet it was stated, at one of our meetings, that it was of comparatively recent introduction.

Many papers and short notes on the Fauna and Flora, and the Antiquities of the Channel Islands, are scattered through the Natural History and Antiquarian periodicals of the last 70 years.

We, as a Society, should also publish some account of the lives of that talented band of Naturalists who made the Natural History and Antiquarian productions of Guernsey known to the world some 50 years ago. I refer to Mr. F. C. Lukis, Dr. F. Lukis, Dr. Hoskins, Mr. G. Wolsey, Mr. P. Le Lievre, Mr. John T. Gallienne, Mrs. Collings, and many others.

I would like now to say a few words on the progress of my own particular branch of study—Entomology—during the past few years.

I have often been asked the question what is the practical use of it, and I have been often tempted to reply that its chief benefit lies in its lack of practical use. With all of us the affairs of everyday life must occupy the greater portion of our time, and it is then a relief to turn to the study of Natural History for its own sake, without regard to any question of utility. The pleasure to be derived from the study is its own exceedingly great reward.

But the facts and observations so carefully made and recorded by the Field Naturalists and Entomologists of the past, are now found to be of immense service to the scientific

investigator of Nature. The student of Evolution has drawn many of his most apt illustrations from the insect world. The agriculturists and growers are beginning to wake up to the fact that some knowledge of the science of Entomology is necessary to them. Many a crop could have been saved if the life history of the pest which was destroying it had been known at the time.

I have been much interested in reading in the *Entomologists' Monthly Magazine* for the present month, that at the Massachusetts Agricultural College, Amherst, Mass., a course of six hours a week in Entomology is offered during the summer term, its aim being to give a general knowledge of insect anatomy and physiology, and a systematic review of the whole group, taking as types, as far as possible, those forms of economic interest to man, and at the same time giving the life history of each species so taken and the means of combating it.

A knowledge of the insecticides and insecticide machinery and their use is given.

An interesting feature of the course is the collection which each student makes and arranges of the common species which may be found in the College grounds and the near-by region.

A very full museum collection serves as an aid to identification and arrangement. There is also a laboratory, provided with tables, microscopes, re-agents and glass ware, also a lecture room. The library comprises 2,500 works on Entomology.

Again I notice an advertisement emanating from the School Board Offices in London, asking for insects of all orders for the purpose of distribution for use in Natural Science lessons in Elementary Schools.

Every well-educated person now seems eager to know something at least about the wonderful organic forms which surround him. What a change from the temper of two or three generations ago, when the Naturalist, especially the Entomologist, was looked on as a harmless enthusiast.

One of the questions of the day is that of the connection between malarial fever and mosquitoes. It has now been placed beyond a doubt that malaria is due to a parasite belonging to the family Hœmobidæ, passing the first stage of its existence in the stomachs of certain mosquitoes, and by the bites of the latter introducing it into the blood of man.

The generic name of this particular kind of mosquito is *Anopheles*, of which there are several species.

The one in Italy is a different species to that in India. These flies are developed from larvæ in ponds and pools of stagnant water, and they can be destroyed by pouring paraffin oil over the surface of the water. The best plan whenever practicable is, of course, to fill in and drain off these ponds.

Before leaving the subject, I may mention that a malarial expedition has telegraphed home from Bonny, in Nigeria, news of the discovery of another parasite found in the proboscis of mosquitoes, which causes Elephantiasis. You are aware what a terrible scourge this disease is to millions of natives in tropical countries, and that it is due to a minute worm which lives in the lymphatic vessels.

It is stated in *Science Gossip* that the discovery has been simultaneously made in England by Dr. Low and in India by Captain James.

The late Edward Newman wrote in the *Zoologist* for 1872, that "We seem to have ignored these islands in everything but plants and mollusks."

In 1896 Mr. Tutt stated in the *Entomologists' Record*, that "The Entomology of Guernsey was better known than that of many an English county."

Mr. Malcolm Burr states that the Channel Islands species will be included in his forthcoming work on the *British Orthoptera*. Mr. Claude Morley will also include the Guernsey and Alderney species in his British *Ichneumonidæ*.

Mr. Lucas has mentioned the names of those species found in Guernsey and Sark in his recently published work on the British Dragon Flies. Mr. Tutt, in his work on the British *Lepidoptera* has also included Guernsey and Sark in the list of localities given for many of the species, and Mr. A. Fauvel, of Caen, an eminent French Entomologist, has written to me asking for the names of the *Coleoptera* found in Guernsey and the other islands, as he is writing a catalogue of the species found in Normandy, and wishes to include those found in these islands also. All this serves to show that the work done by our Society is appreciated by naturalists both in England and France.

I will now conclude by expressing a hope that each member will take up some particular branch of Natural Science, and will enjoy the study as much as I have done during the intervals of a busy life.

THE SUNSHINE OF GUERNSEY FOR 1900.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

THE year 1900 has been the fourth best of the seven years of which I now have a record. That is to say we have had three better and three worse years. The year, though beaten by three years of the period, has given more sunshine than the average.

TABLE I.

GUERNSEY SUNSHINE.

SEVEN YEARS' TOTALS, MEAN AND COMPARISONS.

Years.	Annual Totals in Hours.*	Hours below* the Sunniest Year, 1899.	Percentage of Possible.	Sunless Days.	Sunniest Month.	
					*Hours.	Month.
1894	1724	490	38	49	230	May.
1895	2069	145	46	50	310	May.
1896	1825	389	41	61	307	May.
1897	1874	340	42	53	305	July.
1898	2090	124	47	40	338	July.
1899	2214	—	49	43	340	July.
1900	2026	188	45	51	326	July.
Mean..	1975	239	44	49	315	July.

* Decimal places have been omitted. The nearest whole figure is used.

TABLE II.

SUNSHINE AT BEAULIEU, HAUTEVILLE, GUERNSEY, 1900.

Months.	Hours.				Sunless Days.	Possible Sunshine.	
	Monthly Totals.	7 Years' Means.	Above.	Below.		Percentage.	Monthly Totals.
January	45·88	53·82	—	7·94	10	17	269·20
February	65·43	90·18	—	24·65	10	22	294·39
March	121·96	149·52	—	27·56	9	34	367·59
April.....	233·88	190·30	43·58	—	—	57	408·58
May	277·93	259·09	18·84	—	2	58	472·79
June	222·42	270·17	—	57·75	1	46	481·30
July	326·33	289·86	36·47	—	1	67	484·46
August.....	269·54	252·13	7·41	—	1	60	442·64
September ..	241·83	195·52	46·31	—	1	64	376·74
October	142·02	101·78	42·24	—	—	43	331·43
November ..	39·90	68·75	—	28·85	3	14	271·07
December....	38·83	43·58	—	4·75	13	14	255·15
The Year..	2025·95	1964·70	61·25	—	51	45	4454·82

January, February and March were all below the seven year mean, but one year of the period, 1898, gives lower monthly totals for these months, which were, however, beaten in every other year. April was sunny, and soon raised the curve of the year above the average. This month was beaten in 1898 by half an hour only, and with that exception has been the sunniest April. May, though above the average, was beaten by 1894 and 1895. The curve having been above the mean line during April and May, sinks below it in June, which month fell 57 hours below the average. The June of 1894 is the only one with less sunshine. July to October inclusive were sunnier than the average. July was less sunny than that month in 1898 and 1899. August was a long way behind 1899, but compares favourably with the other years. October was also beaten by that month in 1899. November and December were comparatively sunless. The sunniest month was July, with 326 hours, the least sunny December, with nearly 39 hours.

The percentage of possible sunshine has not been high, but was good in July, August and September. July, the sunniest month, gave 67%, but as we have had monthly figures as high as 73% there is nothing unusual in the figure.

I give a table of the monthly totals of the seven years, which can be referred to in proof of the statements made.

TABLE III.

SEVEN YEARS' RECORD OF SUNSHINE IN GUERNSEY.

Months.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	Seven Year Mean.	Range in hours.
January	64·85	63·28	39·91	42·44	66·71	49·72	45·88	53·82	26
February	87·02	111·26	98·92	63·79	85·95	118·90	65·43	90·18	55
March	196·77	168·08	110·10	146·59	93·24	209·90	121·96	140·52	117
April	191·77	191·21	171·41	163·29	224·33	156·26	233·88	190·30	68
May	230·01	309·74	307·02	239·85	204·35	245·55	277·93	259·09	105
June	215·31	294·50	301·86	269·29	273·48	314·37	222·42	270·17	100
July	187·20	254·61	277·73	305·62	337·73	339·93	326·33	289·86	154
August	186·43	244·84	234·20	239·19	265·15	325·57	269·54	252·13	140
September ...	155·16	269·41	107·28	142·23	267·07	185·71	241·83	195·52	162
October	91·86	91·35	85·18	120·74	128·79	152·57	142·02	101·78	67
November ..	74·53	62·10	68·96	66·30	94·62	73·86	39·90	68·75	54
December ...	44·20	17·95	38·12	75·15	48·99	41·94	38·83	43·58	30
The Year ..	1724·47	2068·93	1825·56	1874·48	2090·41	2214·28	2025·95	1964·70	290

Last year I gave figures which could be made into a smoothed curve, showing that the sunshine had given a progressive rise from 1894.

THE SMOOTHED CURVE.

Three years including	Mean No. of Hours.	Percentage of possible.
1894, 1895, 1896.....	1,872	42%
1895, 1896, 1897.....	2,022	45%
1896, 1897, 1898.....	2,043	46%
1897, 1898, 1899.....	2,056	47%
1898, 1899, 1900.....	2,091	47%

The figures brought up to 1900 still show a progressive rise, but probably the apex of the curve has been reached.

December, 1895, still stands as the lowest record of sunshine with 18 hours.

The number of sunless days has not been great. I give a table to show the place of 1900.

TABLE IV.

SUNLESS DAYS AND AVERAGE.

Months.	1894	1895	1896	1897	1898	1899	1900	Mean of 7 Years.
January	10	8	15	9	14	8	10	10
February	6	6	7	11	3	5	10	7
March	0	2	7	1	5	0	9	3
April.....	0	1	3	3	0	3	0	1
May	2	0	0	2	1	1	2	1
June	0	0	0	1	0	0	1	0
July	2	0	0	0	0	0	1	0
August.....	3	0	1	3	0	0	1	1
September ..	1	0	3	5	1	1	1	1
October	4	5	5	5	3	2	0	3
November ..	10	9	8	6	7	11	3	8
December ..	11	19	12	7	6	12	13	11
The Year..	49	50	61	53	40	43	51	46

The highest amount of sunshine in a single day was 14·66 hours, occurring on the 22nd of June. This was 90% of the possible, and was beaten by that of the 7th July, 1898, when 94% was registered.

The average and mean daily sunshine was as follows :—

TABLE V.

Months.	Average. Hours.	Mean of Seven Years. Hours.
January	1·4	1·7
February	2·3	3·2
March	3·9	4·8
April.....	7·8	6·3
May	8·9	8·3
June	7·4	9 0
July	10·5	9·2
August.....	8·7	8·1
September	7·7	6·5
October	4·6	3·2
November	1·2	2·2
December.....	1·2	1·3
The Year.....	5·4	5·3

The difference between Jersey and Guernsey is still in favour of Guernsey, 1900 having given the following totals:

Guernsey..... 2,026 hours.
*Jersey ..... 2,022 „

I also give the comparison for the English towns named below and Guernsey†: -

TABLE VI.

Town.	Hours.	Excess of Guernsey.
London	1352	674
Cambridge	1644	382
Oxford	1500	526
Southampton ..	1708	318
Plymouth.....	1744	282

* The figures given for Jersey have been extracted from the "Weekly Weather Reports" for 1900, in which only the first decimal place is given.

† Also extracted from the "Weekly Weather Reports" for 1900.

ADDITIONS TO THE LIST OF ALDERNEY INSECTS.

BY MR. W. A. LUFF.

I AM indebted to Dr. F. A. Walker, D.D., F.E.S., for the addition of a number of Butterflies and Moths captured in Alderney by Mr. Lionel Langlois, of New Street. Mr. Langlois assured Dr. Walker that he had himself taken the insects in Alderney about nine years ago. Two of the butterflies, *Argynis paphia* and *Thecla quercus*, can only be regarded as accidental or occasional visitors to the island, perhaps blown over from the opposite coast of France. The others are quite likely to be natives, but were not observed by Mr. E. D. Marquand, Dr. Walker, or myself.

The moths new to the list in this collection are *Arctia mendica*, *Ennomos tiliaria* and *Agrotis exclamationis*.

Mr. E. D. Marquand records the occurrence of a fine specimen of *Vanessa polychloros* (the large Tortoiseshell Butterfly) on July 24th. He also saw a specimen of *Colias hyale* (the Pale Clouded Yellow Butterfly).

A larva of *Chærocampa Elpenor* (the Elephant Hawk Moth) was brought to Mr. E. D. Marquand alive, and it is now in the chrysalis state, waiting development in the spring. Another larva of this species was seen in the possession of a lad. *Gnophria rubricollis* (the Red-necked Footman) was also taken.

Dr. Walker captured a specimen of *Cœnonympha pamphilus* (the Small Heath Butterfly) near the old lime kilns, this being the only one seen.

Mr. E. D. Marquand was successful in capturing a specimen of *Emus hirtus* on July 9th. This is one of the rarest of British beetles. Fowler remarks in his "Coleoptera of the British Isles" that it resembles a humble bee in flight, but Mr. Marquand says it looked more like a wasp but with the peculiar flight of a beetle. Another specimen was seen by Dr. Walker shortly afterwards, but not captured.

I have to thank Dr. Walker for specimens of two rare species of Dragon Flies, namely, *Sympetrum flaveolum*, L., and *Lestes Barbara*, Fab. Both these insects were taken in considerable numbers near the pond on Longy Common.

S. flaveolum has been taken by myself in Guernsey, but is rare in England. One specimen captured by Dr. Walker is an unusual variety, and is described by Mr. R. McLachlan in the *Entomologists' Monthly Magazine*, September, 1900. He says :—"At first sight I thought it might be *fonscolombi*, but it is really *flaveolum*, with the yellow on the wings reduced to a minimum. Parallel varieties of *flaveolum* are not unknown, but are certainly rare (or confused with other species); on this point see De Sely's 'Revue des Odonates,' where (at pp. 34-35) allusion is made to similar individuals from Belgium and Prussia."

Lestes Barbara was for a long time on the British list on the authority of one example in the Dublin Museum, said to have been taken in Ireland. Mr. McLachlan says it is distinctly Mediterranean in its habits, but is abundant near Paris.

One specimen of the large Dragon Fly, *Æschna mixta*, was taken by Mr. N. W. Gaudion and sent to Dr. Walker. It has been taken in Guernsey and Sark, but is a rare and local species in England, being confined to the south-eastern counties, and but few captures have been recorded.

The Hymenoptera have been submitted to Mr. E. Saunders for naming, with the result that there are nine additions to the list. Unless otherwise stated the insects on the following list were taken by Dr. Walker during this season.

ADDITIONS TO THE ALDERNEY LIST.

LEPIDOPTERA.

RHOPALOCERA (Butterflies).

Pieris napi, *L.* Taken by Mr. L. Langlois.

Colias hyale, *L.* One specimen seen by Mr. E. D. Marquand.

Argynis aglaia, *L.* Taken by Mr. L. Langlois. It is not uncommon in Sark, but has not been taken in Guernsey.

A. paphia, *L.* Taken by Mr. Langlois. Probably a visitor from the opposite coast of France.

Vanessa polychloros, *L.* One fine fresh specimen seen by Mr. E. D. Marquand on July 24th.

Pararge egeria, *L.* Several specimens captured by Mr. Langlois.

Epinephele tithonus, *L.* Taken by Mr. Langlois.

Cœnonympha pamphilus, *L.* One specimen taken by Dr. Walker, 1900.

Thecla quercus, *L.* Taken by Mr. Langlois. An insect we would hardly expect to find in Alderney; the larva feeding on oak. Probably an accidental visitor.

HETEROCERA (Moths).

Chærocampa elpenor, *L.* A larva of this species found by Mr. E. D. Marquand. It is now in the chrysalis stage. Mr. Marquand saw a second specimen in the possession of a boy.

Gnophria rubricollis, *L.* Two specimens captured by Mr. E. D. Marquand in Scott's Valley early in July.

Callimorpha hera, *L.* (var. *lutescens*). A specimen of this yellow under winged variety seen by Mr. E. D. Marquand.

Spilosoma mendica, *Clerck.* Taken by Mr. L. Langlois.

Agrotis exclamationis, *L.* One specimen taken by Mr. Langlois.

Eugonia alniaria, *L.* Taken by Mr. Langlois.

NEUROPTERA.

ODONATA (Dragon Flies).

Sympetrum flaveolum, *L* Very abundant near the pond on Longy Common. Dr. Walker.

Lestes barbara, *F.* A considerable number of specimens of this rare species taken by Dr. Walker near the pond on Longy Common.

Æschna mixta, *Latr.* One specimen captured by Mr. N. W. Gaudion.

COLEOPTERA (Beetles).

Emus hirtus, *L.* One specimen captured by Mr. E. D. Marquand on July 9th ; another specimen seen by Dr. Walker shortly afterwards.

Adalia bipunctata, *L.* Taken by Dr. Walker, 1900.

Meloe autumnalis, *Ol.* Dr. Walker, 1897.

HYMENOPTERA.

FOSSORES.

Pemphredon lugubris. Rev. F. A. Walker, 1900.

Philanthus triangulum, *Fab.*

ANTHOPHILA.

Andrena coitana, *Kirby.*

Megachile maritima, *Kirb.*

Melecta armata, *Panz.*

Apis mellifica, *Linn.*

ICHNEUMONIDÆ.

Ophion luteum.

TENTHREDINÆ.

Tenthredopsis coquebali, *Kl.*

Pœcilosoma luteolum, *Klug.* Taken on the Island of Burhou by Dr. Walker.

DIPTERA.

Sargus cuprarius, *L.* Taken in Mr. Gaudion's garden on currant bushes, 1900. Rev. F. A. Walker.

Syrphus balteatus, *Deg.* Longy Road. F. A. W.

Eristalis intricarius, *L.*

TWO GRASSES NEW TO THE CHANNEL ISLANDS.

BY C. R. P. ANDREWS, M.A.

(Reproduced by permission from the *Journal of Botany*, Vol. 38, Feb. 1900.)

Two grasses have been found in Alderney and Guernsey during the last year, of which one has not previously been recorded within the limits of the British Flora, while the other has only been noted once or twice as an undoubted introduction. Judging from the localities in which they grew, and from a comparison of their continental distribution, there is little doubt that they may both be considered as native plants.

The obvious objection which meets this statement at the outset is that numbers of the best British botanists have visited these islands since Babington's *Primitiæ Floræ Sarnicæ* in 1839 called attention to their great botanical interest, and that, if the plants were really native, they would have been discovered before. The objection can, I think, be satisfactorily answered in both cases. One of the two, *Phalaris minor*, Retz, so closely resembles *Phalaris canariensis*, L., that it has been passed over without interest as a casual. The probability of this is increased by the fact that *P. canariensis* is found fairly frequently in both Guernsey and Alderney. In the case of the other plant, *Milium scabrum*, Merl., the habitat and the time of flowering will explain its neglect. It grows on the lower slopes of the southern cliffs in an unfrequented part, and flowers from mid-April to May. Botanists, as a rule, arrive in June or later; the spring plants on the southern face of the cliffs soon dry up in these sunny islands and disappear. These particular cliffs are visited in the winter for *Ophioglossum lusitanicum*, but all traces of the little fern have gone before *M. scabrum* is in flower. The plants which flower with it grow in equal or greater profusion in the more easily accessible lowlands, and

the lower parts of the cliffs are seldom disturbed by botanists in the spring. The grass, as I saw it, is only 1–4 inch in height, and its small purplish panicle among the thick growth of the surrounding plants might well be overlooked, especially as the small purplish spike of *Mibora verna* is by no means uncommon in the same locality.

PHALARIS MINOR, Retz. Obs. Bot. iii. 8 (1783).

Syn. *P. aquatica*, W. Sp. i. 236 (1797) et auct. plur. (non L.)
P. bulbosa, Desf. Fl. Atl. i. 35 (1798).
P. decumbens, Moench, Meth. 208 (1794).

Annual. Root fibrous. Stems several, often branched near the base, erect or ascending, 1-2 feet in height, furrowed but smooth. Leaves flat, acuminate, about $\frac{1}{3}$ inch broad at the base, strongly veined, glabrous, rough on the edges. Uppermost sheath inflated, longer than its leaf. Ligule long, obtuse, clasping the stem. Panicle spike-like, ovoid or cylindric-oblong, 1-1$\frac{3}{4}$ inch long. Spikelets much compressed laterally. Two outer glumes $\frac{1}{4}$ inch long, membranous, sharply acuminate, with a prominent green nerve on either side of the green keel; the upper half of the keel furnished with a scarious wing, of which the margin is dentate or erose towards the top. Fertile glume $\frac{1}{8}$ inch in length, laterally compressed so that the margins meet and completely enfold the palea, pale green, glabrous on the keel and on a small swollen portion at the base of either side, the rest covered with appressed silky hairs; at its base, opposite its margins, is a narrow acute hairy rudimentary glume, one-fourth as long as the fertile glume; the corresponding barren glume at the base of the keel of the fertile glume is reduced to a microscopic scale. Palea like the fertile glume, but much smaller, ciliate on the keel, but otherwise glabrous. Fruit compressed acuminate.

Distribution, according to Nyman.—Lusit.; Hisp.; Gall. occ. mer.; Ligur.; Ital. med. mer. ins.; Croat.; Dalm.; Attica; Algeria; Eubœa; Corinth; Cyclad.; Creta; Thrac. or. Richter (*Plantæ Europææ*, 1890) only gives "Regio mediterranea," which is certainly insufficient.

P. minor is distinguished from *P. canariensis* by the narrower shorter leaves, more cylindric panicle, and smaller spikelets; by the wing of the keel of the outer glumes, which, though very variable in the same panicle, is scarcely ever entire, and does not extend more than half-way down the keel; and by the presence of only one rudimentary glume, much smaller proportionately than those of *P. canariensis*.

In Grenier & Godron's *Flore de France* (iii. 438, 439—1855-56) it is stated that the stems of *P. minor* are "longuement nus au sommet," while those of *P. canariensis* are "brièvemet nus au sommet." I find that this character is quite unreliable, varying greatly in both species.

Mr. E. D. Marquand, who is working at a Flora of Guernsey and the smaller islands, first called my attention to *P. minor* in Alderney last July, thinking that it was only a casual. It was growing in good quantity in a small sandy cultivated field; he has found it in other similar localties in the same island. I searched for it in Guernsey, and found it in several places; in good quantity in sandy cultivated fields by the sea, and twice sparingly on the sandy shore.

The plant is not uncommon on the west coast of France. Lloyd (*Flore de l'Ouest de France*, 393—1886) records it as occurring in cultivated fields, and especially gardens, in all the maritime departments from Vendée to Ille-et-Vilaine, where it grows near St. Malo and St. Brieuc, amongst other places. Corbière (*Flore de Normandie*), 626—1894) states that he has found it himself in sandy fields on the coast near Barfleur and Cherbourg, and accepts it as a native, though it is very rare so far north. Grenier & Godron give a long list of localities, including Barfleur, with no question as to its being native. Being a native of both sides of the bay in which the islands are situated, it might naturally be expected to occur there also. That it has been overlooked through its likeness to *P. canariensis* is certain, for it is incredible that a casual should appear in the same year for the first time in considerable quantity in many parts of two islands which are as far apart from one another as Dover is from Calais.

Babington recorded *P. canariensis* as "naturalised in several places in Guernsey." In a list of the *Flora of Guernsey*, published by Mr. Marquand in 1891, it is stated that *P. canarienses* "appears native in sandy places" on the north-west coast. Mr. Marquand now believes that this was *P. minor*. I have often seen *P. canariensis* in gardens in Guernsey, but all the specimens from sandy ground by the coast which I examined last summer were *P. minor*.

In Townsend's *Flora of Hants*, p. 402, Mr. Marquand recorded *P. canariensis* as growing "in the sand at Mudeford, well established." In a letter to me he says that it was "growing abundantly, quite away from any habitations, and having every appearance of being wild," and suggests that this might be *P. minor*. It would be an interesting point for some Hampshire botanist to clear up next summer.

MILIUM SCABRUM, Merlet de la Boulaye, Herbor. Maine et Loire, 220 (1809).

Syn. *M. confertum*, Mill. Gard. Dict. (1768), non L.
M. confertum, Guss. Fl. Sic. Syn. i. 131 (1842).
M. effusum, β, Kunth, Enum. Plant. i. 66 (1833).
M. vernale, Dub. et al. (non. Bieb.), teste Nyman.

Annual. Root fibrous. Stems erect or ascending, 1½–4 in. high. Leaves flat, short, uppermost not one-fourth as long as its sheath. Sheaths strongly striate, somewhat inflated. Ligule long, acute. Panicle about 1 in. long, erect, contracted; branches short, 2-nate, unequal, capillary, flexuous. Spikelets ovoid, 1 line long. Two outer glumes equal, convex, obscurely 3-nerved, green or purplish, with narrow scarious border. Fertile glume smaller, pale green, smooth, shining; its margins enfolding the similar palea. Stem, sheaths, rachis, panicle-branches, and outer glumes all slightly scabrid.

Distribution, according to Nyman.—Batav.; Belg. (sec. Parl.); Gall. occ. mer.; Cors.; Sicil.; Ital. med. mer.; Cretæ et Cephal. mont. ex Heldr. Richter gives "Eur. med. et mer.," which is again insufficient.

It seems impossible to distinguish *M. scabrum* specifically from *M. vernale*, Bieb., which only differs in its larger size and diffuse panicle. It is said also to be less scabrous, but *M. scabrum* varies greatly in this character. Both plants grow in Italy, and Parlatore considers *M. scabrum* to be merely a variety of *M. vernale*. Richter gives it as *M. vernale* b. *scabrum*. Kunth classed it as a variety of the perennial *M. effusum*, but appears to be alone in this view. *M. vernale*, like *M. scabrum*, is an annual, and intermediate forms can be seen in the British Museum Herbarium which it is difficult to assign with certainty to either.

I found this plant growing sparingly on the southern cliffs of Guernsey, near Petit Bot, on April 17th, 1899. These cliffs are about 300 feet in height, the precipitous face varying from 100 to 150 feet; the remainder consists of a steep slope, overgrown in many parts with gorse, heather, and bracken, and everywhere covered with vegetation, except where the bare rock projects in boulders. *M. scabrum* grows on the lower part of this green slope, well away from any houses or cultivated land; in no part of the island is one less likely to meet with an alien or casual.

Merlet's original specimens came from Thouars, in the department of Deux-Sèvres, where the plant still grows. Lloyd (*Flore de l'Ouest de France*, 402—1886) states that it

is found in sandy places and sandy thickets in that department, and also in Gironde, Charente-Inférieure, and Vendée, but it is a rare plant. North of Vendée it only reappears on the coast of the Netherlands, certainly in South Holland, possibly in Belgium also. Oudemans (*Flora van Nederland*, iii. 475—1874) records it for the neighbourhood of Katwijk, the dunes near Overveen, and also near Wassenaar and Scheveningen, in Nordwijk. These localities are given in all the Dutch Floras, and there are specimens from Scheveningen in the British Museum. Van Hall (*Spec. Bot.* 32—1821, and *Flora Belgii Septentrionalis* i. 55—1825) records it, but gives no localities for Belgium. Dumortier (*Observations sur les Graminées de la Flore Belgique*—1823) says, "Plantam hanc rarissimam mecum communicaverunt amici van Rees et van Hall," but gives no localities. Parlatore (*Flora Italica*, i. 155—1848) says, "E stata trovata in Belgio, in Francia," &c. Nyman gives Belgium only on Parlatore's authority, and the modern Belgian Floras omit it. Husnot (*Graminées de France, Belgique, Iles Britanniques, Suisse*, 1897) remarks that it is "indiqué en Belgique par Parlatore; il est très douteux que cette espèce y ait été réellement trouvée."

The most noteworthy points about *M. scabrum* in North-west Europe are, that it does not occur between Vendée and the Netherlands, that it grows on sand, and that it is generally much taller than the Guernsey plant (Culmi pedales—Dumort.: culmo vix pedali—v. Hall: spithamæum—Reichb.: chaume de 2-3 dec.—Lloyd). There are other plants which do not come further up the French coast than Finistère, and yet are found in Guernsey—e. g., *Ornithopus ebracteatus* (also in Alderney and Scilly Islands), *Ophioglossum lusitanicum*, and *Isoetes Hystrix*. The reappearance of *M. scabrum* in the Netherlands shows that there is no inherent improbability of its being native in Guernsey. Several plants which usually grow on sand are found on the Guernsey cliffs—e. g., *Romulea Columnæ* and *Juncus capitatus*, both of which grow near *M. scabrum*. Many of the cliff plants are much dwarfed, and I am told by a resident in Rome that *M. scabrum* grows there on walls, and is no larger than my Guernsey specimens.

I can see no reason to doubt that these two grasses are native in the Channel Islands, and should therefore be included in the British Flora with *Cynosurus echinatus*, *Lagurus ovatus*, and *Bromus maximus*. Their discovery only serves to emphasize a fact which hardly needed emphasizing—viz., that the Channel Islands are, geologically and botanically, a part of France and not of Britain.

THE RAINFALL OF GUERNSEY FOR 1900.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

THE same stations used in former papers on this subject are used this year, through the kind co-operation of the undernamed gentlemen.

The stations are four in number and are given in order of elevation above the sea level.

E. Charles Ozanne, Esq., has been replaced, at his request, by Mr. Hocart, who has placed the gauge on his own estate, in place of its former position, at the Club House of the Golf Club. It has thus been moved a few hundred yards to the East of its former position.

The stations are :—

TABLE I.

Observer.	Position.	Elevation.	Coast.	Period of years Compared.
Mr. B. Rowswell ..	Les Blanches, St. Martin's .	300	East.	7
Mr. A. Collenette..	Beaulieu, Hauteville	190	East.	58
Mr. J. J. Carey....	Claire Mare, Perelle	50	West.	5
Mr. Hocart	Les Mielles, Vale	33	North.	4

I give also, as I have done each year, a table which will set before you the monthly totals at each of the four stations.

TABLE II.

Months.	HAUTEVILLE.		CLAIRE MARE.		LES BLANCHES.		L'ANCRESSE.		The 58 years' Average.
	Monthly Totals, 1900.	Monthly Means for the last Four Years.	Monthly Totals, 1900.	Monthly Means for the last Four Years.	Monthly Totals, 1900.	Monthly Means for the last Four Years.	Monthly Totals, 1900.	Monthly Means for the last Four Years.	
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
January ..	5·22	3·59	4·20	2·86	4·97	3·03	4·49	2·85	3·87
February .	6·19	3·74	5·62	3·33	5·91	3·47	6·08	3·72	2·65
March ...	1·53	2·29	1·44	1·94	1·49	2·39	1·32	2·11	2·45
April	1·30	2·75	0·92	2·20	1·20	2·76	1·14	2·25	2·30
May.....	1·07	3·27	0·86	2·19	1·02	2·77	1·08	2·28	2·18
June	2·71	3·17	2·27	1·83	2·33	2·21	2·06	1·86	2·10
July	1·27	1·01	1·16	0·83	1·23	0·98	1·14	1·03	2·23
August ..	2·69	2·87	1·62	2·31	2·36	2·67	2·01	2·30	2·41
September	1·45	2·53	1·14	1·98	1·23	2·47	1·21	2·09	3·13
October ..	2·96	2·69	1·43	1·56	2·47	2·42	2·03	1·95	4·89
November.	6·21	4·45	5·19	3·29	5·81	4·11	5·28	3·47	4·46
December.	5·30	5·28	3·81	4·08	4·72	4·89	4·37	4·40	4·15
The Year..	37·90	37·10	29·65	28·42	34·74	34·10	32·21	30·54	36·74

This table also enables me to compare the means as found for Hauteville with the means of the four stations for each month. The differences between the two sets of means give for the annual rainfall a correction of 4·86 inches. The correction given last year on a three years' average was 4·66, and that of the preceding year 4·63. It will be observed that the correction is increasing, in other words the difference between the rainfall of town and country has been increasing for three years.

The corrected means can be studied in the table given.

TABLE III.

THE MEANS OF THE FOUR STATIONS FOR THE LAST FOUR YEARS, THEIR DIFFERENCES FROM THE MEANS OF HAUTEVILLE, A CORRECTED MEAN FOR THE ISLAND COMPARED WITH THE 58 YEARS' MEAN.

Months.	Mean for Hauteville for the last Four Years.	Mean for the Four Stations for the last Four Years.	Difference.	58 Years' Average.	Corrected Mean for the whole Island.	Corrected Mean for the whole Island given last year.	Difference between the 2 last columns showing the different distribution of Rain during the year.	
	Inches.	Inches.	Inches.	Inches.			+	-
Jan.....	3·59	3·08	-0·51	3·87	3·36	3·33	0·03	..
Feb. ..	3·74	3·56	-0·18	2·65	2·47	2 42	0·05	..
March..	2·29	2·18	-0·11	2·45	2·34	2·35	..	0·01
April ..	2·75	2·49	-0·26	2·30	2·04	2·00	0·04	..
May....	3·27	2·63	-0·64	2·18	1·52	1·91	..	0·39
June ..	3·17	2·27	-0·90	2·10	1·20	2·05	..	0·85
July ..	1 01	0·96	-0·05	2·23	2·18	2·20	..	0·02
Aug. ..	2·87	2·54	-0 33	2·41	2·08	2·14	..	0·06
Sept. ..	2·53	2·26	-0·27	3·13	2·86	2·84	0·02	..
Oct.	2·69	2·15	-0·44	4·89	4·45	4·43	0·02	..
Nov. ..	4·45	3·83	-0·62	4·46	3·84	3 87	..	0·03
Dec. ..	5·28	4·66	-0·62	4·15	3·53	3·59	..	0·06
Year..	37·10	32·24	-4·86	36·74	31·88	32·06	..	0·18

The year ranks as a wet one, the difference from the mean is not great being 1·16 in. We have, however, a heavy record in wet days. Six months of the year gave a greater number of wet days than the average; they were January, February, June, August, November and December. Of these, January, February, November and December, were the highest (see table for detail). Of the other six months, July and September were very dry. In the annual total Les Blanches gave the greatest number of wet days, 199; Hauteville was next with 186. Claire Mare followed with 179, and L'Ancresse experienced the fewest wet days, its total being 171. The 58 years' average is 178 days, and the average of the four stations for 1900 is 182 or 5 days over the average.

TABLE IV.

THE WET DAYS OF EACH STATION COMPARED WITH THE AVERAGES.

The Months.	Hauteville.	Claire Mare.	Les Blanches.	L'Ancresse.	Averages.	
					Of the Four Stations.	58 Years' Mean.
January	30	30	31	28	30	19
February	22	23	23	19	22	15
March	11	11	14	8	11	15
April	12	10	12	11	11	13
May	7	9	7	7	7	11
June	14	13	15	12	13	11
July	6	5	7	6	6	11
August	14	14	15	13	14	12
September	6	5	5	5	5	14
October	16	15	17	14	15	19
November	24	24	27	26	25	19
December	24	20	26	22	23	19
The Year.....	186	179	199	171	182	178

NOTE.—Correct the 57 Years' Mean in last year's paper from 161 to 177.

Last year I gave proof of the inequality of the rainfall over the area of the island in heavy falls. This factor has hardly been so well marked this year, but nevertheless there have been important differences which bear on the relation of the stations to each other.

TABLE V.

HEAVY FALLS OCCURRING IN ONE DAY.

Date.		Hauteville.	Claire Mare.	Les Blanches.	L'Ancresse.	Prevailing Direction of the Wind.	Difference between the extremes on each day.
Month.	Day.						
January	6	·53	·54	·49	·51	SSW	0·05
,, ...	20	1·10	·82	·96	1·00	W-S	0·22
February	1	·55	·25	·47	·33	E	0·22
,, ...	5	·59	·43	·54	·50	E	0·09
,, ...	10	·42	·57	·45	·65	NW	0·23
,, ...	13	·46	·54	·78	·55	SSE	0·32
,, ...	15	·78	·67	·73	·76	SW	0·11
,, ...	17	·50	·55	·48	·59	W	0·09
,, ...	18	·80	·64	·78	·61	NW	0·19
March	21	·73	·58	·69	·72	NE	0·15
April	3	·54	·38	·42	·53	NW	0·16
June	14	·80	·60	·70	·60	NW	0·20
July	1	·66	·51	·67	·71	NW	0·20
August	6	·63	·38	·47	·42	NW	0·25
September ..	27	·58	·37	·43	·43	SW	0·21
October	26	·38	·27	·60	·33	NW	0·33
,, ...	31	·64	·06	·35	·20	SW	0·58
November ..	15	·55	·26	·34	·22	NW	0·33
,, ..	16	·52	·58	·55	·42	SW	0·16
,, ..	24	·62	·53	·48	·48	SW	0·14
,, ..	25	·36	·23	·54	·19	NW	0·35
December....	3	·64	·33	·53	·41	S	0·31
,, ...	4	·93	·56	·95	·74	NW	0·27
,, ...	6	1·00	·94	·89	·98	NW	0·11

The cause of the differences between the stations on so small an area as our island is, to say the least, obscure. I have been inclined to set it down to the fact that the town is on the lee side of the island during prevailing winds, but this seems to be a somewhat doubtful explanation, for though the greatest difference of the year (October 31st, difference 0·58 in.) between the stations occurred with a S.W. wind and seems to favour the hypothesis, yet large differences have occurred in favour of the town with winds from all directions. The cause is most probable the different elevations of the land, the hilly portions of the island causing a lesser fall on the rise and a greater fall on the decline of the land.

I now give a table of the extremely heavy or light annual totals since 1841, just that these may be on record.

ANNUAL TOTALS OF, OR ABOVE, 40″ SINCE 1843.

1846	42·5	1876	41·7
1848	48·0	1877	42·4
1852	49·1	1878	43·7
1859	43·4	1879	41·5
1860	48·0	1880	44·9
1865	43·3	1882	47·8
1866	44·4	1886	44·7
1872	56·9	1894	40·3

ANNUAL TOTALS OF, OR BELOW, 30″ SINCE 1843.

1844	27·6	1856	30·3
1847	29·2	1858	25·5
1851	29·3	1870	25·0
1854	29·9	1887	28·7
1855	30·4		

We have now a 58 year record. I have taken the mean of each decade so as to obtain evidence of a period if one exists.

1843 to 1850 inclusive—	1st period of eight years	.....	36·2	inches.
1851 to 1860	,,	2nd period of ten years	.....	35 2	,,
1861 to 1870	,,	3rd ,,	,, ...	34·8	,,
1871 to 1880	,,	4th ,,	,, ...	41·6	,,
1881 to 1890	,,	5th ,,	,, ...	37·1	,,
1891 to 1900	,,	6th ,,	,, ...	35·6	,,

Though these figures show a great difference in the decades, it does not point to a periodic return, for the minimum and maximum figures are in the adjacent decades.

I have also taken the mean of each half decade, but though I give the figures I do not attach any importance to

the periods shown. It appears to me that rainfall, as we have it, is erratic. If periods exist they will be found over longer intervals of time.

1843 to 1847 inclusive	5 years	34·0 inches.	
1848 to 1852	,,	5 ,,	40·0 ,,
1853 to 1857	,,	5 ,,	31·4 ,,
1858 to 1862	,,	5 ,,	36·0 ,,
1863 to 1867	,,	5 ,,	38·4 ,,
1868 to 1872	,,	5 ,,	37·2 ,,
1873 to 1877	,,	5 ,,	38·6 ,,
1878 to 1882	,,	5 ,,	42·8 ,,
1883 to 1887	,,	5 ,,	36·6 ,,
1888 to 1892	,,	5 ,,	34·8 ,,
1893 to 1897	,,	5 ,,	36·2 ,,
1898 to 1900	,,	3 ,,	35·5 ,,

DROUGHTS.

Only three droughts have occurred during the year, for which see

TABLE VI.

ABSOLUTE DROUGHTS.

1	April 16 to 29	14 days	At Hauteville, Claire Mare, Les Blanches and l'Ancresse.
2	May 5 to 20	14 ,,	At Hauteville, Les Blanches and l'Ancresse.
3	September 3 to 23	21 ,,	At Hauteville, Claire Mare, Les Blanches and l'Ancresse.

The chief peculiarities of the year has been the excessive wetness of February and November and the dryness of May, July and September.

The months May to October inclusive alternate as though influenced by a regular wave motion. October has been proved to be the wettest month of the year, and that place it still occupies in the 58 years' average. During the last four years, however, it has been less wet than January, February, November and December. In the 58 years' average, June is the driest month, but during the last four years July has taken its place. Again, May and June, the two driest months in the 58 year average, have during the last four years proved wetter than March and April. All these facts point to some changes in progress, the meaning of which we have not discovered.

NOTES ON A SOMEWHAT RARE BACILLUS.

(Reprinted from the *Guernsey Advertiser*, October 20th, 1900.)

At the meeting of the Guernsey Society of Natural Science, held on Wednesday evening at the Guille-Allès Library, Mr. W. A. Luff in the chair, Mr. J. B. Nickolls, Public Analyst, F.C.S., M.R.I.P.H., &c., &c., read the following most interesting paper :—

MR. PRESIDENT, LADIES AND GENTLEMEN,—

From the notice issued by our indefatigable Secretary, I find that I am announced to read a "short paper on a rare and remarkable bacillus that has recently appeared in our midst."

My remarks on the subject were intended to be merely a few "notes," the result of my own observations, rather than anything like an exhaustive "paper," but without troubling you with a further apology, I will proceed with my subject.

Some three years ago—in the month of August, 1897, to be more precise—I was requested to make an analysis of a sample of water used for drinking purposes and drawn from a well situated at the rear of a house on the Esplanade. This water had been suspected of being the cause of a curious fungoid or other growth which had suddenly made its appearance upon a variety of cooked food in the larder and the safe. The well was a comparatively shallow one, situated at the bottom of a sloping well-manured and highly-cultivated garden, and within a few feet of a stable. Under these circumstances it was not surprising to find the water "*bad*" in every sense, and totally unfit for drinking purposes. The use of that water was abandoned, but the food trouble continued unchecked. Water from adjoining premises was then examined; water from a well contiguous to a fowl-run, and analysis proved this to be just about as foul as the other. This well was also given up, and water from the Water Works used instead, but the trouble still continued.

From the first I had felt convinced that the water supply had little or nothing to do with the affair, though the employment of sewage-polluted water for washing, &c., was tantamount to the use of a bacillus culture broth for the same purpose, and about the best means possible of inducing the appearance and continuance of the germs. The trouble first manifested itself as a series of little blood-red spots on a dish of green peas that had been cooked the previous day. The mistress of the house at first blamed the cook for having sprinkled the peas with cayenne pepper, an imputation the cook stoutly denied.

Next day a milk pudding was similarly affected, and some cold potatoes and a joint of beef also became spotted later in the day. I was shown the potatoes, and I requested that they might be allowed to remain undisturbed for another twenty-four hours. They were left in the larder, and at the end of that time no one would have recognised them as vegetables at all, for they were completely covered with dark red slime, and exactly resembled the blood-covered kidneys of a newly-slaughtered animal. I took some of them to my laboratory, and at the end of another day the smell they emitted (tri-methylamine) was like that of putrid fish, and well-nigh overpowering.

I may here state that the house where this phenomenon occurred was exceedingly well kept in every way, and the utmost cleanliness prevailed throughout. The drains were apparently in perfect order, clean and well flushed, the house dry and well ventilated, in fact the weather being warm just then, the family were practically living out of doors all day and sleeping with the windows opened to their widest extent all night.

There was, however, one grave defect at first not realised, for the plumbers had recently connected a large leaden pipe to the main drain, to serve as a waste-pipe to a newly-arranged lavatory basin. The basin had been delayed in transit and the pipe remained unstopped in any way for about a fortnight, during which time the red growth appeared. Adjoining the lavatory was the larder, where the trouble began, and between the two rooms a window in which one pane was missing. The sewer gas thus had free access to the larder, and every rise and fall of the tide caused the impure air to circulate through the defective window and over the food. The microscope revealed the fact that the trouble was caused by the "bacillus prodigiosus" and the stopping of the drain I have alluded to, together with a

thorough fumigation of the lavatory and larder by means of liquified SO_2 (Sulphur dioxide) speedily put an end to this troublesome pest.

I heard nothing of this bacillus again until on returning from my holiday a few weeks ago, when I was asked to examine the water of a well supplying an important Insular Institution. There seemed to me no likely reason why the water should be suspected of being impure, for the well—though merely a shallow spring on the hill-side—was well removed from any likely source of pollution. I asked what was the reason of my being requested to make an analysis, and was told that it was because the food had been "all turning red" of late, and some of the authorities thought impure water was probably causing it. I asked to be shown the larder, and some infected food, and instantly recognised my old friend *prodigiosus*.

The authorities asked me to make a thorough investigation of the probable cause, and although at first view everything appeared to be free from sanitary defect, I found that an escape of sewer gas into the refectory where the bacillus first appeared was possible. In this refectory there were several basins for washing purposes, connected by a large terra-cotta drain to the main cess-pit of the Institution.

Although the drain was provided with a "stench trap," there was no disconnecting gulley or fresh air inlet, and thus every gallon of water emptied from the basins displaced a gallon of sewer air from the drain into the room, and close by this drain stood the cupboard in which the bacillus first appeared. The bacillus first showed itself as minute red spots on some boiled pork, and from the refectory cupboard it spread to the various larders of the building, and in the course of a week or two it was observable on almost all the cooked food, more particularly on fat salt pork, potatoes and other starchy substances, and on milk puddings and cooked beef. Upon analysis the water proved to be perhaps the purest sample I have ever met with, and thus the only likely cause for the appearance of the bacillus is the sewer gas I have alluded to.

The bacillus had resisted all ordinary methods of extermination before I was consulted about it, hot water and soap had been used to scrub the woodwork, and whitewash had been freely applied to the walls. A long and varied experience in the use of Formalin as a germicide, led me to try its effects in this case, and I therefore prepared a 10 per cent. solution of Formalin, and directed it to be diluted

to about 1 per cent., and the shelves to be wiped over with it. This was done and the bacillus vanished, the cure being instant and complete, the cost and the trouble practically nothing, while from its harmless and non-poisonous nature, there was no disturbance to anything, always excepting the bacillus.

Perhaps it may be well here to state that the term bacillus is applied to those micro-organisms which are rod shaped, differing from bacteria in degree rather than in kind, and reproducing their species by simple sub-division. Their minute size may be imagined from the fact that Cohn estimates that it would require 40,000 millions of bacilli to weigh one grain. The rate at which they multiply is about as difficult to realise, for many of them are capable of reproduction every hour, thus one bacillus may become sixty-four at the end of six hours, and in a day at this rate of increase there would be something like four millions, and in three days about 4,772 billions, a number perfectly incomprehensible. It is computed that under similarly ideal conditions the single and practically weightless bacillus is capable in the same time of producing an aggregation of bacilli weighing no less than 7,500 tons, so I think you will admit that the name prodigiosus may be appropriately applied.

This particular bacillus is termed chromogenic, that is it produces colouring matter, in this case a brilliant red.

Under the microscope it is seen that this pigment does not permeate the whole mass of the germ, but resides merely in the outer sheath, which envelopes a living mass of grey-coloured protoplasm. Let it be remembered that bacilli are fungi of the lowest known type, plants in fact from which the green colouring matter (chlorophyll) is absent. The chromule, as any other such colouring matter is called, of the bacillus prodigiosus, is capable of being extracted by ether, and is only formed when the bacillus is living under suitable conditions as to food and temperature. It is, however, possessed of astonishing vitality, for an exposure to a temperature of 158°-176° F. (70° to 80° C) is effectually resisted, and it requires at least half-an-hour's exposure at the temperature of boiling water for its complete destruction by heat.

The red colouring matter is developed best at blood heat, but disappears if the bacillus be cultivated on one kind of nutrient medium for any length of time, though it may be again coaxed into full tint by a diet of potatoes, on which it seems to flourish exceedingly well in our climate.

The bacillus prodigiosus seems to have one of the best authenticated pedigrees, and to have been known under various names for many centuries. Undoubtedly it was the cause of so-called "bleeding bread or bleeding Host" or the "bloody sweat" of the middle ages. The moist Consecrated Wafers left on the altar overnight were found to be covered with red spots resembling blood next day, drops which rapidly grew larger in a few hours. What else, it was asked, could it be but blood, and what could it mean but the portent of some great calamity? Needless to say great capital was sometimes made out of this "miracle." Priest and layman alike could believe in it with perfect honesty, and owing to lack of knowledge it was regarded as purely supernatural.

I believe that the chief church in Brussels is called St. Gudule's, and that there is an Annual Festival of the Miracles on July 13th. Here then is the connection with St. Gudule and the bacillus prodigiosus.

About 1350 a Jew, to show his detest of Christianity, stole 16 Consecrated Wafers from the altar of St. Catherine's at Brussels. He was discovered and assassinated, but his widow gave the Wafers in their Pyx to several other Jews, and they, one Good Friday, laid them out on a table and stabbed them with a dagger. The legend says that as each wafer broke it bled, at the sight of which the horrified Jews fled, and the wafers were afterwards collected and restored to the priests of St. Gudule's, since which time (it is said) serious epidemics have been arrested, and many other "miracles" performed through their agency.

The appearance of this terrible "blood portent" seems to have generally been associated with some act of desecration on the part of the unfortunate Jews, who were made to confess their guilt under inquisitorial torture.

About the year 1600 twenty Jews were tortured and burnt at Judenburg, in Styria, and in 1620 another 28 met with a similarly awful fate, while in 1819 a peasant at Liguara, near Padua, was terrified by finding bloodstains on some polenta which had been made and shut up in a cupboard on the previous evening. Next day similar patches appeared on bread, meat, and other articles of food in the same cupboard. It was naturally regarded as a miracle and a warning from Heaven, until the case had been submitted to a Paduan naturalist, who discovered the presence of the bacillus, which Ehremberg, at Berlin, had previously identified as the monas prodigiosa.

The bacillus has survived many names, and appears as you see from time to time without apparent cause, and has hitherto been apt to outstay its welcome, and to produce commotion and discomfort everywhere.

Specimens of the bacillus were exhibited at Oxford a year or so ago, and aroused much interest; the only times I have seen it here are the early autumn of 1897 and again last month. It is fickle and uncertain in its growth, and though specimens have been known to retain their vitality after being enclosed in a hermetically sealed tube for upwards of 18 months, it does not always respond to attempts to cultivate it when wanted for exhibition purposes. During the last 48 hours some I have has started into fresh activity under the influence of heat and moisture in an incubator kept in the dark, and I hope at some future meeting to be able to show those who care to see it a quantity of the bacillus with the most roseate hues.

One other peculiarity of the bacillus prodigiosus may be of interest, viz., the antagonism it appears to have for some others of more or less the same kind.

When several organisms are associated in a liquid culture one species may take precedence, and others develop later, or two or more species may develop at the same time, or the growth of one species may prevent the growth of another by either exhausting the food material by its rapid growth, or by producing products which retard or destroy the other. Thus it is said by some observers that our bacillus prodigiosus is antagonistic to several others, and I think this is probably due to the tri-methylamine or the lactic acid it gives rise to.

Serum therapy depends on this antagonism or symbiosis as it is called, hence the use of anti-diphtheritic and other serums, but on the other hand the presence of one bacillus sometimes increases the activity of another, and attenuated cultures of anthrax bacilli may re-acquire virulence if injected simultaneously with a culture of bacillus prodigiosus.

Amidst the "wars and rumours of wars" now agitating civilisation, it is well that the nature of the bacilli is so much better understood, and I think it no less fortunate that in the simple and harmless Formalin we have now a means of exterminating one of the most remarkable species of that wonderful family.

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Slade, Miss D., Ladies' College.
Spencer, Mr. R. L., Esplanade.
Steinschen, Mr. W. E.
Stranger, Mr. W., jun., St. Sampson's.
Tourtel, Rev. R. H., D.D., F.S.A. (Normandy), Torteval.
Wagstaffe, Miss E., Hauteville.

TRANSACTIONS OF THE SOCIETY.

Monthly Meeting held on January 16th, 1901, Mr. W. Sharp, President, in the chair.

Miss Slade and Miss Wagstaffe were elected members.

A fragment of granite having a hollow like a small cup-mark, found near Roque Balan in a hedge, was exhibited by Mr. Hocart. Specimens of the Heron, Green Woodpecker, and Warbler were exhibited by Mr. Collenette; they are not new to the Museum.

A silver medal, struck to commemorate the first session of "Assises Scientifiques Litteraires et Artistiques fondées par M. De Caumont" held at Caen on the 28th, 29th and 30th of December, 1893, was shown. It was presented to Mr. W. A. Luff by the Committee of Organisation in acknowledgement of assistance rendered in drawing up the "Rapport sur le Mouvement Scientifique de Normandie," &c. which included a notice of the work done by members of this Society.

Twenty specimens of the larva of the large Garden White Butterfly (*Pieris brassicæ*) found in full vigour on January 7th in a garden at Burnt Lane were exhibited by Mr. W. Luff. There had been a hard frost the previous night, which had not affected them in the least.

Mr. De La Mare reported the exposure of a section of an ancient beach in the drain at the Bouët. Mr. Collenette then gave a very able and interesting lecture with diagrams shown by the lantern, on the Rainfall and Sunshine of 1900. A cordial vote of thanks to Mr. Collenette was passed.

Monthly Meeting held on February 20th, 1901, Mr. W. Sharp, President, in the chair.

There was a good attendance of members. Owing to Mr. Domaille's illness, his paper on an Ancient Implement found on his land was postponed.

A snake's skin and a boomerang brought from Australia by Mr. Osmond were exhibited.

A facsimile of the Tupper medal (belonging to Mr. Sandeman) issued by William and Mary in commemoration of the battle of La Hogue, was exhibited by Mr. J. L. Pitts. The actual medal presented to Captain Tupper was in gold, and was accompanied by a massive gold chain; the captains of the men-of-war engaged in the battle received a silver medal. Captain Tupper's was probably the last one struck, for there is a serious flaw in it; it was presented before 1692. The motto means: "No night follows." Louis XIV, had been acclaimed as "Le Roi Soleil," yet when his fleet was destroyed and, as in the device, his sun was setting, no night followed. Mr. Pitts read extracts from letters recording the proceedings of the privateer commanded by Captain Tupper and her consort, in which also a Jersey privateer is mentioned, on a certain occasion before the Battle of La Hogue.

Mr. Pitts also exhibited the actual medal presented to Jean Breton, the pilot to Lord De Saumarez's squadron when it escaped from the French in 1794. This medal had been carried to America by some descendant of Breton; it was purchased there by a Guernseyman, who brought it back to the island. Mr. Henry Turner, hearing the circumstances, has purchased the medal for £5.

Tokens or medals commemorative of the capture of Porto Bello by Admiral Anson were shown; also a Roman coin found near the Castel Church, a coin with ecclesiastical symbols and a gold coin found in Guernsey, all from Captain Lukis's museum. Hr. H. Marquand passed round for inspection a pamphlet entitled: "Notes sur l'île de Guernesey par Messire P. Stafford Carey." Mr. Collenette exhibited photographs of an old picture, which Mr. H. Marquand knows to be in the possession of Miss White; the picture is interesting as it shows the Semaphore at Jerbourg kept by Captain White in 1810, with a watch-tower, not the Château of Jerbourg, immediately behind it.

Mr. De La Mare reported the continuation of the deposit of the pebbles in the road at the Bouette.

Monthly Meeting held on March 20th, 1901, Mr. W. Sharp, President, in the Chair.

Specimen of the Rousset rock in Rocquaine Bay, an intrusive vein of felsite brought for the Society by Captain Jones, and a blunt celt found by Mr. Le Lacheur at the

Norgiots were shown round, also a sandstone cast of the stem of a tree of the carboniferous period from coal brought to the island by Mr. O. Dorey. Mr. Domaille then read his paper on a stone implement and Mr. Marquand read a further account of the Signal Station at Jerbourg at the beginning of the last century (1809) and events connected with it.

Monthly Meeting held on April 17th, 1901, Mr. W. A. Luff, Vice-President, in the chair.

Mr. Derrick showed two stones resembling ancient implements, found in Sark. Mr. Luff read a paper on *Dactylopius Luffii*, a species of *Coccid* new to Science, discovered by him in Guernsey. Mr. Collenette exhibited a specimen of *Eschara* on which were *Tubularia*, also a sponge of large size found on the coast. Mr. Collenette exhibited specimens of *Chitons*, and explained their structure.

Monthly Meeting held on May 21st, 1901, Mr. W. A. Luff, Vice-President, in the chair.

A specimen of *Testacella scutulum*, a shelled slug, was exhibited by Mr. Luff (see pp. 21, Transactions 1900); it was known in Guernsey in 1801 as stated by Mr. F. C. Lukis in the "Magazine for Natural History" for 1834. Mr. Collenette exhibited some bones of the Dodo, which are in the museum. An interesting conversation followed on the distribution and extinction of species.

Monthly Meeting held on June 19th, 1901, Mr. W. Sharp, President, in the chair.

Mr. Luff exhibited some varieties of *Arctia lubricipeda* or Buff ermine Moth, bred from selected varieties in England, to show how so-called new species might be produced. Experiments with this object in view are being carried out in England and in Switzerland. He also showed a specimen of *Anax Imperator*, a rather rare (in England) Dragon Fly; it has appeared early this season.

Mr. Pitts brought a table of the weather returns from the old Signalling Station at Jerbourg, which had been most elaborately tabulated by Mr. Rowswell, (Librarian) from the

entries of the diary of Captain White, keeper of the station. These being for the years 1811-2-3, are the oldest tables of weather in the island preserved.

The following excursions were then arranged :—

July 4th.—Alderney by *Courier*. Fare, 3s.
„ 11th.—Walking excursion to Jerbourg, Doyle's Monument.
„ 18th.—Anneville. 1s. Trinity Triangle by waggonette.
Aug. 1st.—L'Erée. 1s. 6d. Trinity Triangle.
Aug. 15th.—Sark. Tug Company.
Aug. 22nd.—Walking excursion to Saint's and Icart.
Aug. 29th.—L'Ancresse. 1s. Trinity Triangle.
Sep. 12th.—Ronceval. 1s. Trinity Triangle.

Monthly Meeting held on October 16th, 1901.

Secretary reported that in company with Mr. Pitts, Mr. Quick, Mr. Naylor of Bradford, Yorks, and two other visitors he had looked through the herbarium and found the specimens in good condition ; that he had supplied specimens of *Spiranthes Æestivalis* to Mr. E. Hunnybun of the Red House, Godmanchester, Huntingdon, who writes : "Many thanks for your kinduess in sending me *Spiranthes Æstivalis* ; both the flower roots arrived in beautiful condition. I am glad you did not send me more as it would be almost wicked to destroy a rare bird, insect or plant without sufficient reason. After I have drawn the *Æstivalis*, it will be forwarded to another person for the same purpose (illustration of book), and will then be dried." Mr. E. D. Marquand, Vice-President, in forwarding Mr. Honnybun's letter says: "Jersey has been tried in vain for a specimen." Roots of *Romulea (Trichonema) Columnæ* have been forwarded to a local authority, who says he could only find one specimen on the Warren at Dawlish ; it is practically exterminated there.

The publication of "The Flora of Guernsey and the Lesser Channel Islands" by the Vice-President, Mr. E. D. Marquand, was announced, but the consideration of the book itself was left over for a future occasion.

Mr. Luff announced additions to the Alderney lists : One moth, *Phygas Birdella*, caught on cliffs has curious roughened antennæ. Another moth, *Fumea casta*, has curious larva-cases formed of stems of grass. Also a specimen of a non-British Chaffer *Cetonia morio*, but this has previously been found in Guernsey, Sark and Herm. Mr. Spencer captured on the Butes a specimen of the Swallow-tailed Butterfly,

Papilio machaon, a rare visitor : one was captured in Guernsey last year. Larvæ of the Convolvulus Hawk Moth, *Sphinx Convolvuli* have been taken in Alderney. Mr. Marquand also sends *Gnathoconus albo-marginata* and *Meloë proscarabæus*, which are both new to the list.

One addition to the Guernsey list, *Crambus Pinetellus*, a small but pretty moth captured by Mrs. Boley. A pupa of *Sphinx Convolvuli* was exhibited. This is the first exhibited to the Society ; its special peculiarity is the protuberance from the head, which will develop into the proboscis.

Mr. Robilliard of the Piette forwarded some curious balls formed of dried cow-dung. These are formed by a large black beetle, *Copris lunaris*, a near ally of the Egyptian sacred beetle *Scarabæus*. This creature rolls up these balls depositing in the centre an egg ; the larva when hatched feeds on this till full grown and then passes still inside it into the pupa state.

A new station was mentioned for the Coccid *Excæretopus formiceticola* peculiar to Guernsey, viz. : Pleinmont. Mr. Collenette described the peat at Longy Bay, Alderney.

Mr. Derrick then read a paper on the antiquities of Alderney by the late Dr. F. E. Lukis, published in the Journal of the British Archæological Association, April, 1847. Among the most important information in the paper the following may be noted : Mr. Lukis possessed an impression of a seal of one of the superiors of the Order of Cordeliers, who is supposed to have resided in Alderney ; this is not the original seal, probably a copy of an anterior one ; it was found at Valognes. The legend is " Sigillum custodis insularum inferioris Normaniæ " ; symbols, the cross carried in a frail bark beyond the sea. The S.E. part of Alderney was that which the original inhabitants occupied ; here may be seen traces of ancient buildings silted over by sand. There is a Druid's altar in the N.W. on an elevated spot overlooking the Bay of La Clanque ; urns are said to have been discovered beneath it. A dilapidated Cromlech stands in the valley east of Longy called " Le Vaux Tremblier." There are two others on brow of hill, S.E. of Longy common ; part of an urn was found under one. There is an entrenchment or dyke on hill S.W. of Longy, also a stone cist on rising ground over Longy common. When Longy was first brought under cultivation, a dark-coloured subsoil was found under silt, in it were fragments of pottery, querns and coins of Caligula, Antonius Pius and others, also large stone pebbles with spindle-hole in one end only ; near is a menhir, " La Pierre du Villain,"

with fragments of bronze instruments, clay beads, pottery and pantiles. On lot 19 were remains of a building, querns, Samian ware, &c., with patterns of animals, and echinus moulding, all denoting Roman occupation of this part of Alderney. Unfinished castings of copper, lumps of bronze metal, and ashes of charcoal indicate a manufactory in the neighbourhood of Longy, also an ingot of copper weighing 12lbs. The "Nunnery" received that name first when occupied by troops in 1793. In old documents, *e.g.*, "Le Vieux Rental" it is called "Les Murs de Bas." It is of quadrangular form with remains of corner towers having circular bases 6ft. in diameter and masonry 6ft. in height. At a height of 17ft. is a course of herring-bone work composed of stone and Roman tiles. The mortar of the walls is coarsely made with lime, sand and sea-shells. The present entrance was made in 1793. The original one was in the west wall.

Monthly Meeting held November 20th, 1901.

There was a good attendance of members.

Mr. R. C. Mabbs was proposed as a member.

Mr. A. Collenette exhibited specimens of peat from Longy Bay, which had been referred to at the last meeting.

Mr. Sharp exhibited a beautiful neolithic implement said to have been found 12 years ago at St. Martin's.

Mr. W. Luff exhibited a large cockroach, *Periplaneta australasiæ* found alive in a packet of bananas imported from Jamaica by Mr. J. Parsons. Also a minute ant, *Monomorium Pharaonis*, which had been sent from Alderney by Mr. E. D. Marquand. It is new to the Alderney list.

Mr. Derrick reported the receipt of an official communication giving the height of Hougue Haunt Nez as 342 feet (on largest map, 242); also a note from Mr. E. D. Marquand identifying a fine scarlet white-spotted fungus found by Mr. Peters, jun., near Moulin Huet, as *Amanita muscarias*, one of the most beautiful of British Agarics, as well as one of the most poisonous. This is the first record of its occurrence in Guernsey.

Mr. J. L. Pitts then read a communication which Mr. B. T. Rowswell had inserted in "Knowledge" for Nov. 1901. Mr. Rowswell says: "The Wryneck arrives here in large numbers about the beginning of April, and is heard constantly until the end of June, or beginning of July, but seldom later, although it remains with us until September. The latest date on which I heard it was Jnly 3rd. This year I heard one as

late as July 10th, as I thought for the last time this season. But a Wryneck was calling several times at one spot on August 19th and from that date on, either a friend or myself heard the bird nearly every day up to September 10th at which date it ceased calling. Localities: trees at the top of Fort Road aud Colborne Road, Hubits and Bon Air." The ornithological editor suggests the bird heard so late was the Green Woodpecker, which has a very similar cry, but though Mr. Rowswell did not see the bird, he believes his identification from the cry alone sufficient. This Woodpecker has been seen and shot in this district of St. Martin's. Mr. Rowswell also contributed some notes on the hail shower of November 15th, which will appear in the *Transactions*.

Mr. A. Collenette then showed a large number of bronze implements which were in 1833 dug up on Longy Common and bequeathed to the museum by the late Mr. Gaudion.

An interesting discussion ensued as to the Roman occupation of the different islands. A beautiful iron dagger dug up in the Castel churchyard was shown; it was lent by Mr. Lukis.

On Saturday, November 30th, Mr. J. J. Carey brought word into town that a cist or stone-lined grave had been found by men working in a quarry on the hill near Richmond and Perelle Bay. Mr. Collenette organised a special excursion of members, who on Thursday, Dec. 5th, proceeded to the spot guided by Mr. J. Carey. The disappointment was great to find that the cist had been entirely broken up. The owner had promised Mr. Carey to preserve it for exploration by the members, but his son, prompted probably by the idea that he would discover hidden treasures, opened the place, taking up the stones and placing them a few yards off. The stones were smaller in size than those usually employed for this purpose. The smooth or smoothened surfaces were turned inward, the irregular surfaces outward. The stones were let into the earth around, so that the outline of the enclosure could still be traced; the space was about 7ft. long and 20in. broad and 6 or 8in. below the surface. According to the workmen, nothing was found within the cist except fine earth which may have percolated through spaces between the covering stones, neither bones, sword, beads or pottery, and the search made by the members bore no results.

The burial would probably be of a comparatively late period, *i.e.*, of the iron age, and similar to one found about 20 years ago on the property of Mr. Duquemin, Cobo, near St. Matthew's Church. Mr. Carey states that three such graves have been found on the same hill.

Annual Meeting held on Wednesday, Dec. 18th, 1901.

There was a very moderate attendance of members.

EIGHTEENTH ANNUAL REPORT.

The Society has continued its useful work during the past year. No special discovery has been made, but there has been the same steady collection of material and useful information, which will greatly assist anyone studying local specialities in the future.

Botany is apparently the science which has appealed to Guernseymen more than any other. Local botanists have always been to the fore, they have constantly been adding to our store of knowledge of the plants of the island, and this year the work has been completed by the publication of "The Flora of Guernsey and the Lesser Channel Islands" by Mr. E. D. Marquand, the worthy ex-President of this Society, a botanist native of this island, another added to the long list of worthies of whom Guernsey has good reason to be proud. The publication is a most valuable one; it is of great interest to members of this Society, it will remain a text-book on local botany for many years, and is so exhaustive as to leave little room for further discoveries in this branch of investigation. The Society must be proud that so valuable a work has been carried through by one of its members, and honoured by having Mr. Marquand still included in its list of officials.

The results of the labours of another of our honoured Vice-Presidents in the Entomological department are rapidly accumulating, and are now becoming so complete that few districts in the United Kingdom can show such exhaustive lists, so much valuable information collected and so much honourable work done in this department of Science. Our transactions might contain more information on the higher forms of life; perhaps some member will help in this department. Meanwhile, the most fascinating study of Marine Zoology is no longer absolutely neglected, for this year will be published Mr. Marquand's paper on the Marine Shells.

The indoor meetings have maintained their interest, and have been very fairly attended.

During the season a series of out-door excursions was organised and in an endeavour to make them attract more members, walking excursions were tried again. The result, however, was not very encouraging. Excursions to the

adjacent islands depend for their success so much on the weather on the fixed day, that one is not surprised that they occasionally fall through as did that to Sark, but good work was done by the few members who ventured to Alderney. At the walking excursion to Jerbourg, the course of the north boundary of the fortifications was traced for about 100 yards; we may hear more of this later. Various other interesting points in the peninsula were also revisited. The first official visit to Anneville enables us to record the continued existence of two old arched doorways, also part of the dressed-stone front of the more modern mansion, also various walls connected with the old enclosures, and the undisturbed condition of the old moat-surrounded warren. The visit to l'Ancresse enabled members to observe the results of the efforts made under the directions of the States' authorities for the preservation of the great dolmen, now enclosed by a railing.

The following publications have been received during the year. The Society gives its best thanks to those supplying them:

From the Department of Agriculture, U.S.A.:—
- "Our Foreign Trade in Agricultural Products."
- "Trade of the Philippine Islands."
- "Trade of Puerto Rico."
- "Sources of Agricultural Imports into the U.S."
- "Distribution of the Agricultural Exports of the U.S."
- "Our Trade with Japan, China and Hong-Kong."
- "Bulletins No. 20, 21 and 23 and Report 67."
- "Proceedings of the Academy of Philadelphia, Vol. LIII., Part I."
- "Preliminary report of the copper-bearing rocks of Douglas County, Wisconsin."
- "A Contribution to the Geology of the pre-Cambrian rocks of Fox Valley, Wisconsin."
- "Geography of the region about Devil's Lake and the Dalles of Wisconsin."
- "Bulletin No. 7, Part I.—Clays and Clay Industries."

From the Boston Society of Natural History:—
- "Proceedings, Vol. 29, Nos. 10, 11, 12, 13 and 14."
- "Glacial Erosion in France, Switzerland and Norway."
- "Occurrence of Fossils in the Roxburg Conglomerate."

"Transactions of the Wisconsin Academy of Sciences, Arts and Letters. Vol. XIII, Part I. 1900."

"The Annual Report of the Smithsonian Institution for 1897, No. 2, and for 1898 and 1899."

"Nature Notes and the September number of the Journal of Microscopy."

The following papers have been read and will be published in the *Transactions*:—

"An Ancient Stone Implement," by Mr. T. Domaille.
"The Marine Shells of Guernsey and the Lesser Channel Islands," by Mr. E. D. Marquand.
"The Sunshine and Rainfall of Guernsey in 1901," by Mr. A. Collenette.

The Council desire to return hearty thanks to the Committee of Management of the Guille-Allès Library for the use of the room and other privileges extended to the the Society.

There are at present 85 members.

The Treasurer's report was afterwards read. It showed a deficiency of £6 12s. 6d. which is rather less than last year.

Mr. Derrick then read the report of the Botanical Section and Mr. Luff followed with that of the Entomological Section. He afterwards read Mr. E. D. Marquand's paper on "The Marine Shells of Guernsey and the Lesser Channel Islands."

The Election of Officers was postponed to the January meetings.

G. T. DERRICK, Hon. Sec.

REPORT OF THE BOTANICAL SECTION.

Beside the publication of Mr. Marquand's Flora, there is little to report in the Botanical Section this year. No additions have been made to the Guernsey list.

To the Sark list four additions have been made :—

Asplenium trichomanes, *L.* Common maidenhair spleenwort grows on a wall in the Seigneurie grounds. It appears well established there, probably planted out years ago. This brings the number of Sark ferns to twelve.

Centranthus ruber, *D. C.* Red spur-valerian, grows on a garden wall on the roadside from the Post Office to La Ville.

Matricaria parthenium, *L.* Common feverfew. It grows freely near the outbuildings of a farm at La Villette.

Hypericum linarifolium, *Vahl.* Line-leaved St. John's wort occurs in furze-brakes, &c. The specimen identified came from the back of Mrs. Mollet's farm, Dixcart Lane.

Matricaria is the only of these on either of the old Sark lists.

G. DERRICK, Sec. Bot. Sect.

REPORT OF THE GEOLOGICAL SECTION.

Although the construction of drains has been extensively carried on during the past year both in the parish of St. Peter-Port and in that of St. Sampson's, the excavations have not revealed any very striking features. The opportunities offered by the summer excursions of the Society have not been numerous.

SUPERFICIAL ROCKS.

Rohais, Foulon and Collings Roads.

Superficial deposits are rather poorly represented in these districts. Deposits of yellow earth occur in a few localities but are nowhere very thick. In most places the decomposed rock is found immediately under the soil. In Collings Road this decomposed rock is generally pseudo-stratified, but the excavations being along the strike of the strata, they do not show so well as they did in Camp Pendart.

Banks.

The excavations from Red Lion to near Heronnière were in shingle and sand, doubtless forming part of the modern beach, and overlying a silty clay near the junction of the parishes. Near Heronnière the decomposed rock crops up with a capping of head, consisting of angular pieces of diorite in clay. From this spot to the bottom of Mont Morin Lane, this deposit of head continues, being from Pike's Corner overlaid by yellow earth with occasional sandy patches, but nowhere exceeding 5 or 6 feet in depth.

Anneville and Noirmont.

The Old Capelles Beach is exposed in the "chasse" or passage leading to Anneville, and shows pebbles resting on coarse sand or gravel. We were informed by the proprietor, Mr. Mahy, that the deposit is in places 10 feet deep, and that some of the beds are of fine white sand. We could not see the base of the deposit, but the beach at Noirmont which is on the same level and doubtless of the same period, rests on head. In this it differs from the beaches seen at lower levels, which rest on decomposed rock and are overlaid by head. If the head in both cases is contemporaneous, it would follow that the upper beaches are more recent than the lower ones, and the following series of movements at least would be required to account for the order of the deposits :—

1.—A depression to a point somewhat below the present level to permit the formation of the lower beach.

2.—An elevation above present level, perhaps considerably so, when the head (presuming it to be of sub-aërial formation) was deposited.

3.—A deeper depression when the Capelles and other high level beaches were deposited.

4.—Another elevation when the peat deposits were formed.

5.—A depression, probably still in progress.

ROCKS.

The rock in Foulon Road, Rohais Road and Collings Road, is almost everywhere decomposed, even to the extreme depth of 44 feet reached near the "Beehive," but there are occasional bosses and nodules of undecomposed rock consisting in most cases of diorite. In Collings Road some of these nodules are of the Hornblende gabbro variety, while at the Couture end and also near Mahaut Cottages the crystals are flattened as in "long grain," and this probably accounts for the decomposed rock resembling gneiss referred to in last year's report as having been noticed in Rozel Road. Rock, which however may be fairly called gneiss, occurs near the "Beehive." In most parts, but especially in Foulon Road, intrusive veins of coarser grain occur as they do in the northern part of the Island. Felsitic veins also occur, and are numerous between "Wisteria Cottage" and the "Beehive."

Near the Grande Maison, on St. Sampson's Road, a boss of solid rock occurs, and is of the Hornblende Gabbro variety.

ALDERNEY.

In the course of an excursion to this Island during the month of July, 1901, the sandstone patch on the S.W. coast was visited. A quarry is worked in it. In one spot the sandstone was seen to rest on what appeared to be a boss of decomposed granite. Although pebbles occur in the sandstone, it is not conglomeratic, as might have been expected in the lowermost strata. Lower down the cliff the sandstone is seen in close proximity to syenite with large felsite dykes, but the actual contact is hidden under the soil. There are also small veins of felsite in the sandstone, and the sandstone itself is somewhat altered. From this it might be inferred that the felsite is of later date than the sandstone, but on the other hand the veins are of much smaller size in the sandstone

than in the syenite, and some of the pebbles in the sandstone are of felsite. Moreover, the strata of the sandstone abut against the syenite, so that the line of junction is probably a fault, and the pressure which produced this fault may have been accompanied by sufficient heat to bring about the alteration of the sandstone and the small intrusive veins of felsite.

C. G. De La Mare, Sec. Geol. Sect.

REPORT OF THE ENTOMOLOGICAL SECTION.

During the present year several important additions have been made to both the Guernsey and Alderney lists.

In the report for last year I mentioned the capture of a specimen of *Papilio Machaon* (the Swallow-tailed Butterfly) for the first time in Guernsey. I have now to record the capture of a fine specimen of the same species for the first time in Alderney. It was taken by Mr. Spencer on Butes hill on July 22nd, and Mr. E. D. Marquand saw it alive just after its capture. It had most likely flown over from the opposite coast of France.

Lampides Bœtica (the Long-tailed Blue), which was so abundant in Guernsey in 1899, again appearing, although in diminished numbers, last year, seems to have been altogether absent this season, not a single specimen having been observed or captured. Another Butterfly, *Colias Edusa* (the Clouded Yellow), which was recorded in the report for last year as exceedingly abundant in Guernsey, has been conspicuous by its absence.

A fine specimen of *Argynnis Lathonia* (the Queen of Spain fritillary) was seen, but not captured, on the cliffs between Doyle's Monument and Moulin Huet Bay. On October 13th the Rev. F. E. Lowe again reports the capture of specimens of *Vanessa Io* (the Peacock Butterfly) in his garden.

Sphinx Convolvuli (the Convolvulus Hawk Moth) has been excessively abundant; a great number have been captured hovering over their favourite flowers at dusk, during August, September and October. I have also had numbers brought to me which had flown into houses or had been picked up on walls and posts in gardens; these were in all stages of dilapidation. Although usually fairly common in the perfect state, the larva and pupa of this species is seldom found, but this season quite a number have been dis-

covered in Guernsey, and Mr. E. D. Marquand has sent both a larva and pupa from Alderney.

Acherontia atropos (the Death's Head Moth) has been also very abundant in all stages. A very curious dark variety of the larva was brought to me on August 10th. It differed so greatly from all the other specimens I had seen that I at first thought it must belong to another species. The striped markings on the larva were very dark brown, and it had two large snow-white patches on each side close to the head, giving it a very peculiar appearance. Unfortunately it died before changing into the pupa. I find that a description of a similar variety is given by Morris in the fifth (1896) edition of his "History of British Moths," and Mr. A. May mentions the finding of three specimens in Hayling Island in *The Entomologist* for November. There is a preserved specimen of this variety in the collection of British Moths and their larvæ presented by Lord Walsingham to the Natural History Museum at South Kensington.

Lithosia sericea has been bred by Mr. Baker from larvæ taken on the cliffs.

Amongst the *Noctuæ*, the Rev. F. E. Lowe has bred a specimen of *Dianthœcia capsincola* on May 5th, and several of *D. capsophila* in June, from pupæ taken under the Sea Campion. He also bred a pair of *Heliophus hispidus* from pupæ dug up on the cliffs. The female laid eggs on September 24th which hatched out on October 5th, and are now nearly full grown. Another specimen of that great prize *Leucania vittelina* was taken by the same gentleman on September 20th.

I have to record several additions to the list of the Micro-Lepidoptera of Guernsey and Alderney. *Crambus pinetellus*, a very pretty little moth, was captured by Mrs. Boley at St. Martin's. *Phygas birdella*, a curious little moth, with remarkably roughened antennæ, and the curious larva cases of *Fumea casta* were found during the Society's excursion to Alderney on July 4th. *Gelechia instabilella*, which was taken near l'Erée in July is a very local species in England, being found only in salt marshes. Its larvæ form blotches in the leaves of *Atriplex portulacoides*.

Gnathoconus albo-marginatus, taken by Mr. E. D. Marquand, is a good addition to the list of Alderney Hemiptera.

Two species of Coleoptera or beetles new to the Alderney list have also been taken by Mr. Marquand, viz.:—*Meloe proscarabæus*, a species of Oil Beetle, common in Guernsey,

and *Cetonia morio*. This latter non-British Chaffer has now been recorded for Guernsey, Alderney, Sark and Herm.

A minute house ant, *Monomorium Pharaonis*, has been added to the Alderney list by Mr. E. D. Marquand. A specimen was found walking on some bread, which probably came from a baker's shop infested by it. This is an introduced species and is a pest in some houses in St. Peter-Port.

An interesting capture was that of *Periplaneta australasiæ*, a large Cockroach, which ran out of a package of bananas received from the West Indies by Mr. Parsons. A huge Spider, *Heteropoda? venatoria* was also found alive in one of these packages. On September 14th, 1899, during the Society's excursion to Richmond, I discovered numbers of a small species of Coccid at the roots of *Lepigonum rupestre*. I sent specimens to Mr. Robert Newstead, F.L.S., of Chester, who finds them to be quite new to science and has named them *Dactylopius Luffi*.

As this insect has only been found in Guernsey, I copy a full description from the pen of Mr. R. Newstead, as it appears in the "The Entomologist's Monthly Magazine" for April, 1901.

"DACTYLOPIUS LUFFI, N. SP.

"Ovisac of ♀ rather closely felted, long, cylindrical, and of equal width throughout; ♀ remaining, uncovered, at the cephalic extremity. Long., 3—4; diameter, ·75 mm. ♀ adult very active, constructing ovisac at period of gestation; mealy, but without marginal appendages; segmentation distinct; form rather short, ovate, anal extremity emarginate. Anal lobes indicated by a single hair. Anal ring of six long hairs, intervening spaces with irregular ovate glands. Dermis thickly set with circular spinnerets, forming broad bands on the abdominal segments; there are also numerous short hairs, but these are much fewer in number than the spinnerets. Antennæ of 8 joints, of which the last is much the longest; formula, 8, 1, 2, 3, 4 (5, 6, 7), all the joints with fine hairs. Mentum biarticulate, rather pointed, joints with minute hairs on both surfaces. Legs rather long, hairy; digitules to claw slightly dilate, those of the tarsi simple.

"Long., 1·50—2 mm. Habitat: on the lower stem and roots of Lepigonum rupestre, Guernsey, 'near the west coast of the island.' September, 1899. Discovered by Mr. W. A. Luff.

"Accompanying the specimens, Mr. Luff sent the following particulars:—I herewith enclose *Coccids* (*Ripersia?*) found at roots of *Lepigonum rupestre*, not under stones but in sandy soil; they occur in such thick clusters, and are so lively, that I thought they might possibly be something new (in litt.) The agility of these little "mealy bugs" was quite remarkable, and certainly not

equalled by any other Coccid I have observed. From their habit and small size, I thought it possible that they might be immature, but I found several had already begun to "spin," and in the course of a week or so the rest of them had constructed their ovisacs; most of them on the roots of the *Lepigonum*, which became quite white with them, and many others on the sides of the box in which they were imprisoned.

"This minute species is apparently new, and I have much pleasure in dedicating it to its discoverer, Mr. W. A. Luff, whose work on the fauna of the Channel Islands is well known and appreciated."

On August 22nd, I found a new locality for *Exæretopus formiceticola*, a Coccid recorded as new to science in the *Transactions* for 1893, on the cliffs near Pleinmont Point. The locality where they were first discovered was close to a beach near Bordeaux Harbour. The stones from this beach have now quite covered up the places where they were originally found.

ADDITION TO THE LIST OF THE MACRO-LEPIDOPTERA OF GUERNSEY.

Lithosia sericea, *Gregs.* Several specimens bred from larvæ taken on the cliffs by Mr. Baker.

ADDITIONS TO THE LIST OF THE MICRO-LEPIDOPTERA OF GUERNSEY.

Crambus pinetellus, *L.* One specimen captured by Mrs. Boley in her garden at St. Martin's.

Gelechia instabilella, *Dgl.* One specimen captured at l'Erée in July.

Opostega spatulella, *H.S.* One.

ADDITION TO THE LIST OF THE ORTHOPTERA OF GUERNSEY.

Periplaneta australasiæ. Found in Mr. Parson's shop, Market, having been brought over in a package of bananas from the West Indies.

ADDITIONS TO THE LIST OF ALDERNEY INSECTS.

LEPIDOPTERA.

RHOPALOCERA (Butterflies).

Papilio machaon, *L.* A specimen of this fine species was captured on Butes Hill on July 22nd by Mr. Spencer, who has kindly presented it to me for my collection.

HETEROCERA (Moths).

Phygas Birdella, *Curt.* Several specimens taken on the cliffs during the Society's excursion on July 4th.

Fumea casta. Several larval cases of this species were found on grass stems on the cliffs on July 4th.

COLEOPTERA.

Meloe proscarabæus, *L.* Two specimens taken by Mr. E. D. Marquand.

Cetonia morio. One specimen taken on the cliffs by Mr. E. D. Marquand on July 6th. It is much smaller than any of my Guernsey specimens.

HEMIPTERA.

Gnathoconus albo-marginatus, *Fab.* One specimen taken by Mr. E. D. Marquand.

HYMENOPTERA.

Monomorium Pharaonis, *Linn.* One specimen taken by Mr. E. D. Marquand on October 27th. It was crawling over some bread, and no doubt came from a baker's shop in the neighbourhood.

W. A. LUFF, Sec. Ent. Sect.

THE MARINE SHELLS OF GUERNSEY AND THE LESSER CHANNEL ISLANDS.

BY E. D. MARQUAND, A.L.S., EX-PRESIDENT.

FOR the last two hundred years the Channel Islands have been recognised by marine conchologists as one of the most productive localities on the British coast. Excellent lists and notes on the shells of these islands have been published from time to time, but no complete catalogue has been drawn up, so that it is not easy to tell exactly what species have been found here, especially among generally distributed and more or less common forms.

Whilst studying the marine mollusca of Alderney during the past year, I have found it useful to make out a list of all the species I can find recorded for the neighbouring islands in the books I have at hand; and this list, supplemented by my own notes, although it must not be regarded as exhaustive, may be helpful to future students as a convenient working catalogue, to which additions can be made as our knowledge of the subject extends.

My own work has been exclusively confined to Alderney, about which practically nothing was known. Of course as a collecting-ground it cannot be compared for richness and variety with either Guernsey or Herm; but diligent searching will be rewarded with better results than might be expected, as my wife and I have found here about two hundred species of marine shells, and that without any dredging. The number would not have been so large but for the fortunate discovery last year of a small patch of shell-sand which is uncovered at the extreme verge of low water at spring tides, on the eastern side of the island. A variety of forms belonging to deep water occur in this sand; so that possibly dredging in that neighbourhood would be remunera-

tive. On the north-western coast, just below Fort Tourgis, there is a small shell-beach which is at times very good, though not always productive. We have found very nearly a hundred species cast up on this beach, but most of the shells are much worn and broken.

The information given in the following pages respecting Guernsey, Herm and Sark, is derived from three sources :—

(1) The records given in Gwyn Jeffreys' *British Conchology* (1862-1869). Dr. Jeffreys pursued his researches in these islands with much success, and was aided in his work by two well-known local naturalists—Dr. F. C. Lukis and Mr. J. T. Gallienne.

(2) A series of papers published in the *Journal of Conchology* during the last ten years by Mr. J. T. Marshall, of Torquay, who has a thorough practical knowledge of the molluscan fauna of this region, and whose valuable "Additions to British Conchology," now in course of publication, is not yet completed.

(3) A list of marine mollusca found by Mr. J. Brockton Tomlin, M.A., on the shores of Guernsey and Herm, and dredged in the waters between those islands. I am very grateful to Mr. Tomlin for allowing me to publish this list, as it fills up several gaps, and supplies information respecting the relative frequency of many of the species dredged.

A new Catalogue of British Marine Mollusca and Brachiopoda was compiled by the Conchological Society of Great Britain last year, and published in the *Journal of Conchology*, vol. x, p. 9. In the present paper, however, I have preferred to use the names and classification of Jeffreys' great work, which still remains the most generally used text-book of British students.

The number of marine mollusca now recorded for Guernsey, Alderney, Sark and Herm collectively, amounts to 317 species.

Some years ago I published two papers on the Land and Fresh Water Mollusca of Guernsey, giving localities and distribution of 61 species and their varieties. These papers will be found in the *Transactions* of this Society for 1894 (p. 356) and 1896 (p. 111). Since then an additional land shell has been found in Guernsey—*Helix aculeata*, and two Alderney species do not occur in the larger island, viz., *Neritina fluviatilis* and *Cyclostoma elegans*, so that altogether the total number of mollusca recorded up to this date for Guernsey and the lesser Channel Islands amounts to 381 species.

BRACHIOPODA.

Argiope decollata, *Chem.* In gravelly shellsand at 18 fms. two miles east of Guernsey, rare (Br. Con.) Off Fermain Bay, 16 fms. (Marshall).

A. cistellula, *Wood.* Guernsey (Lukis and Jeffreys).

A. capsula, *Jeff.* Guernsey (Lukis).

CONCHIFERA.

Anomia ephippium, *L.* Guernsey and Herm, common on shore and dredged (Tomlin). Alderney, common (Marquand).

A. patelliformis, *L.* Guernsey, dredged (Tomlin). Alderney, valves only (Marquand).

Ostrea edulis, *L.* Guernsey, dredged occasionally; at Bordeaux Harbour there appears to be traces of oyster culture (Tomlin). Alderney, valves cast up (Marquand).

Pecten pusio, *L.* On shore in Guernsey and Herm, as well as dredged, but sparingly (Tomlin). Alderney, frequent on the shell beach, rare in shellsand (Marquand).

P. varius, *L.* Common on shores of Guernsey and Herm, and dredged, always small (Tomlin). Alderney, alive between tide-marks; dead valves frequent (Marquand).

P. opercularis, *L.* Common dredged; always small and poorly coloured (Tomlin). Alderney (Marquand). Var. *lineata*, Da C. Rare, dredged (Tomlin). Var. *elongata*, Jeff. Guernsey, 20 fms. (Marshall). Var. *audouinii*, Payr. Guernsey, rare (Marshall).

P. tigrinus, *Mull.* Channel Isles (Br. Con.) Dredged between Guernsey and Herm, valves only (Tomlin).

P. Testæ, *Biv.* Guernsey (Jeffreys).

P. maximus, *L.* Channel Islands (Marshall). Alderney, a few large valves (Marquand). Common dredged, young (Tomlin).

Lima subauriculata, *Mont.* Alderney, frequent in shellsand (Marquand). Dredged, rare (Tomlin).

L. Loscombii, *Sow.* Dredged between Guernsey and Herm, rare (Tomlin).

L. hians, *Gmel.* Var. *tenera*, Turt. Bordeaux Harbour, Guernsey, very common in 1900, mostly young ones (Tomlin). Alderney, two valves (Marquand). Common at Herm at very low water, gregarious under large stones (Jeffreys, Tomlin).

Mytilus edulis, *L.* Alderney, and probably all the other islands (Marquand). Var. *ungulata*, L. Channel Isles (Br. Con.)

M. modiolus, *L.* Alderney, young valves, rare (Marquand). Var. *cylindrica*. Marsh. Guernsey, 18-20 fms. (Marshall).

M. barbatus, *L.* Guernsey and Herm, not uncommon on the shore (Tomlin). Alderney, common at low-water mark (Marquand). Var. *depressa*, Marsh. Gouliot Caves, Sark (Jeffreys). Herm (Marshall).

M. adriaticus, *Lam.* Guernsey, dredged, common (Tomlin). Alderney shell-beach, rare (Marquand). Var. *ovalis*, Sow. Guernsey, of small size (Jeffreys).

M. phaseolinus, *Phil.* Channel Isles (Br. Con.) Alderney, rare (Marquand).

Modiolaria marmorata, *Forb.* Common in Ascidians dredged (Tomlin).

M. costulata, *Riss.* Alderney, rare in shellsand, alive in rock-pools, Clanque Bay (Marquand). Herm (MacCulloch).

M. discors, *L.* Guernsey and Herm, common (Tomlin). Alderney, plentiful in tufts of Corallina, &c. (Marquand).

Crenella rhombea, *Berk.* Tolerably common at Guernsey (Jeffreys). Alderney, very rare in shellsand (Marquand). Dredged, rare and very small (Tomlin).

C. pellucida, *Jeff.* Dr. Jeffreys found two perfect specimens and a valve at Guernsey (Marshall).

Nucula nucleus, *L.* Low water in the Channel Islands, double the size of those dredged off the coast (Marshall). In dredgings in deep water off Guernsey, muddy ground (Tomlin). Alderney, common in shellsand (Marquand).

N. nitida, *Sow.* Channel Isles (Br. Con.) Alderney in shellsand (Marquand).

Pectunculus glycymeris, *L.* Guernsey, Alderney and Herm, common (Marquand). Specimens from the Channel Islands differ from those of the British coast in being orbicular (Marshall). Type form very rare (Tomlin). Var. *globosa,* Jeff. Guernsey (Br. Con. Suppl.) Abundant dredged (Tomlin).

Arca lactea, *L.* Guernsey and Herm, common on the shore (Tomlin). Alderney, living at low water; abundant on the shell beach (Marquand). The noted shell beach of Herm is composed principally of the valves of this species (Marshall).

A. tetragona, *Poli.* Alderney, not uncommon, but much worn (Marquand). Herm, frequent, valves only (Tomlin).

Galeomma Turtoni, *Eds. Zool. Jour.* Guernsey, dredged; Herm, not uncommon (Jeffreys). Bordeaux Harbour, Guernsey, one specimen; rare at Herm, gregarious under big stones at extreme low water spring tides (Tomlin). Mr. Marshall says (in 1897) that this species is now nearly extinct at Herm.

Lepton squamosum, *Mont.* Guernsey (Br. Con.) Dredged alive off Castle Cornet in 18 fms., valves common (Tomlin). Alderney, a single valve in shellsand (Marquand).

L. nitidum, *Turt.* Channel Isles (Br. Con.) Occasional in dredgings (Tomlin). Var. *lineolata,* Jeff. Guernsey (Jeffreys). Var. *pisidialis,* Jeff. Guernsey, 18 fms. (Marshall).

L. sulcatulum, Jeff. Guernsey, rather plentiful among corallines in the Laminarian zone (Br. Con.) In seaweeds at low water, and dead in 20 fms. (Marshall). Alderney in shellsand, rare (Marquand). Herm (Marshall). Occasional in dredgings (Tomlin).

L. Sykesii, *Chast.* In sand dredged at Guernsey (Chaster). Off St. Martin's Point, 18 fms. (Marshall).

L. Clarkiæ, *Clark.* Guernsey and Herm, living in weeds at extreme low water, and dead in 20 fms. (Marshall). Occasional in dredgings (Tomlin).

Scintilla Eddystonia, *Marsh.* Guernsey (Marshall).

Montacuta substriata, *Mont.* Channel Islands, at low spring tides on *Spatangus purpureus,* very fine (Marshall).

M. bidentata, *Mont.* Guernsey, of large size (Marshall). Occasional in dredgings (Tomlin).

Lassæa rubra, *Mont.* Guernsey and Herm, very common (Tomlin). Alderney, abundant between tidemarks (Marquand). Var. *pallida,* Jeff. Guernsey and Herm (Tomlin). Alderney (Marquand).

Kellia suborbicularis, *Mont.* Guernsey and Herm, common on the shore (Tomlin). Alderney, frequent between tidemarks (Marquand). Var. *lactea,* Brn. Herm (Tomlin).

Loripes lacteus, *L.* Exceedingly plentiful near St. Peter-Port (Br. Con.) Bordeaux Harbour, Guernsey, and Herm (Tomlin).

Axinus flexuosus, *Mont.* Channel Isles (Br. Con.) Braye Bay, Alderney, dead (Marquand).

Lucina borealis, *L.* Comparatively rare in the Channel Islands, and found chiefly at Herm (Br. Con.) Common at Alderney, young only (Marquand). Young shells common at Herm, and in dredgings (Tomlin). Var. *gibba*, Jeff. In shallow water, Guernsey (Jeffreys). Alderney (Marquand).

Diplodonta rotundata, *Mont.* Belgrave Bay, Guernsey, living in sand at low water of spring tides (Gallienne). Alderney, two valves in Braye Bay (Marquand). Herm, rare (Tomlin).

Cyamium minutum, *Fabr.* Shore of Guernsey, in small weeds (Tomlin). Alderney, common between tidemarks among *Cladophora rupestris* and other algæ, gregarious (Marquand).

Cypricardia lithophagella, *Lam.* Guernsey, 20 fms., a young and perfect specimen (Jeffreys). A small single valve in dredged sand from Guernsey (Waller).

Cardium aculeatum, *L.* Guernsey (Lukis).

C. echinatum, *L.* Belgrave Bay, Guernsey, common, mostly small (Tomlin). Alderney, valves only, rare (Marquand).

C. tuberculatum, *L.* Guernsey (Lukis). Alderney, rare, valves only (Marquand).

C. papillosum, *Poli.* In gravelly sand, at 15-20 fms. off Guernsey and Sark, as well as thrown up on the beach at Herm (Lukis and Jeffreys). Alderney, single valves rare (Marquand). Herm, a live specimen at low water (Marshall). Herm, and dredged, valves only (Tomlin). Var. *obliquata*, Montes. Guernsey, 18 fms. (Marshall). Var. *lactea*, Jeff. Herm, and dredged (Tomlin).

C. exiguum, *Gmel.* Alderney, rare (Marquand). Herm, and dredged, rare (Tomlin). Var. *subquadrata*, Jeff. Guernsey (Jordan, Marshall). Sark (Jeffreys). Herm, at low water (Marshall).

C. fasciatum, *Mont.* Channel Isles (Br. Con.) Alderney, in shellsand (Marquand). Dredged, rare (Tomlin).

C. nodosum, *Turt.* Guernsey, gregarious in 15-20 fms. (Br. Con.) Alderney (Marquand). Common at Herm, and dredged (Tomlin). Var. *rosea*, Lam. Channel Isles, at low water, with the type (Marshall). Guernsey (Br. Con.) Braye Bay, Alderney (Marquand). Dredged, not common (Tomlin). Var. *ovata*, Jeff. Guernsey and Herm (Marshall).

C. edule, *L.* Bordeaux Harbour, Guernsey (Tomlin). Alderney (Marquand). Var. *crenulata*, Lam. Herm (Lukis).

C. minimum, *Phil.* Guernsey, 20 fms., one valve (Marshall).

C. norvegicum, *Speng.* Common alive at Belgrave Bay, Guernsey, at extreme low water, small; rare dredged (Tomlin). Alderney, frequent, dead (Marquand). Var. *gibba*, Jeff. Guernsey and Herm (Marshall). Var. *rotundata*, Jeff. Herm (Marshall). Var. *pallida*, Jeff. Guernsey and Herm (Marshall). Sark (Jeffreys). Rare in dredgings (Tomlin).

Cyprina islandica, *L.* Herm, valves (Tomlin).

Astarte sulcata, *Da C.* One specimen dredged off Herm (Marshall).

A. triangularis, *Mont.* Guernsey, remarkably abundant (Br. Con.) May be dredged in thousands off Guernsey (Marshall). Alderney, frequent in shellsand (Marquand). Rare in dredgings; common off Jersey (Tomlin).

Circe minima, *Mont.* Alderney, worn valves (Marquand). In dredgings, fairly common (Tomlin). Var. *triangularis*, Mont. Guernsey, 18 fms. (Marshall).

Venus exoleta, *L.* Guernsey (Br. Con.) Alderney, frequent (Marquand). Herm, very common (Tomlin).

V. casina, *L.* Alderney, rare (Marquand). Herm, rare, and dredged (Tomlin).

Venus lincta, *Pult.* Guernsey, exceeding 1¼ inches in length (Marshall). Belgrave Bay and Bordeaux Harbour, rare (Tomlin). Braye Bay, Alderney, valves (Marquand).

V. fasciata, *Da C.* Herm, not uncommon (Tomlin). Var. *radiata*, Jeff. Guernsey, 20 fms., and Herm at low water (Marshall). Var. *raricostata*, Jeff. Dredged, scarce (Tomlin).

V. verrucosa, *L* Channel Islands at low water (Marshall). Guernsey and Herm, common (Tomlin). Alderney, common, occasionally alive (Marquand).

V. ovata, *Penn.* Guernsey (Marshall). Alderney, plentiful in shellsand (Marquand). Very common in dredgings (Tomlin). Var. *lutea*, Jeff. Guernsey (Br. Con.) Dredged (Tomlin). Var. *trigona*, Jeff. Guernsey (Jeffreys).

V. gallina, *L.* Guernsey and Herm, not very common (Tomlin). Alderney, valves cast up (Marquand).

Tapes aureus, *Gmel.* Guernsey (Marshall). Braye Bay, Alderney (Marquand). Var. *ovata*, Jeff. Herm (Marshall). Var. *quadrata*, Jeff. Herm (Marshall).

T. virgineus, *L.* Guernsey (Br. Con.) Alderney, common (Marquand). Var. *sarniensis*, Turt. Channel Isles (Br. Con.) Var. *elongata*, Jeff. Guernsey (Marshall).

T. pullastra, *Mont.* Alderney, common (Marquand). Var. *perforans*, Mont. Channel Isles (Br. Con.) Var. *ovata*, Jeff. Guernsey (Marshall). Var. *oblonga*, Jeff. Guernsey (Marshall).

T. decussatus, *L.* Guernsey and Herm (Tomlin). Alderney (Marquand).

Lucinopsis undata, *Penn.* Herm, rare (Tomlin). Var. *æqualis*, Jeff. Guernsey and Herm (Marshall).

Gastrana fragilis, *L.* Guernsey (Jeffreys).

Tellina balaustina, *L.* Guernsey (Jeffreys).

T. crassa, *Gmel.* Guernsey, rare; Herm, common (Tomlin). Alderney (Marquand). Var. *albida*, Jeff. Herm, common (Tomlin).

T. balthica, *L.* Alderney, very rare (Marquand). Herm, dead shells (Tomlin).

T. squalida, *Pult.* Guernsey and Herm (Marshall). Belgrave Bay, but rare in Guernsey and Herm (Tomlin).

T. donacina, *L.* Guernsey (Marshall). Alderney (Marquand). Occasional at Herm, and dredged (Tomlin). Var. *Lantivyi*, Payr. Guernsey (Marshall).

T. pusilla, *Phil.* Channel Isles (Jeffreys). Alderney, one valve (Marquand). Herm, at low water (Marshall). Occasional at Herm, and dredged (Tomlin).

Psammobia tellinella, *Lam.* Herm, common; dredged, rare (Tomlin). Var. *purpurea*, Marsh. Herm (Tomlin).

P. costulata, *Turt.* Guernsey (Turton, Metcalfe, Hanley and Barlee). Herm, living in sand at low water (Marshall). Very rare dredged (Tomlin).

P. ferroensis, *Chem.* Guernsey Harbour, rare (Marshall). Frequent at Braye Bay, Alderney (Marquand). Belgrave Bay, with *Cardium norvegicum*; rare in Herm (Tomlin).

P. vespertina, *Chem.* Common on the shore at Guernsey and Herm (Tomlin). Alderney, frequent (Marquand). Var. *lactea*, Jeff. Guernsey and Herm, rare (Marshall).

Donax vittatus, *Da C.* Alderney, one valve on the shell beach (Marquand). Herm (Tomlin).

Donax politus, *Poli.* Guernsey (Marshall). Herm (Dennis). Common in Darky Bay, Herm; apparently nowhere else (Tomlin).

Amphidesma castaneum, *Mont.* Herm (MacCulloch). Var. *subtrigona,* Monts., is the normal form at Guernsey and Herm (Marshall).

Mactra solida, *L.* Alderney, young shells common (Marquand). Herm, common (Tomlin). Var. *truncata,* Mont. Guernsey Harbour (Marshall).

M. elliptica, *Brn.* Common dredged, small (Tomlin).

M. subtruncata, *Da C.* Guernsey and Herm, not common (Tomlin). Var. *striata,* Brn. Guernsey (Marshall).

M. stultorum, *L.* Guernsey, rare (Tomlin).

M. glauca, *Born.* Guernsey and Herm, at unusually low tides (Lukis). Herm, very rare; confined to a bank of very fine sand which is rarely uncovered by the tides (Marshall).

Lutraria elliptica, *Lam.* Alderney (Marquand). Herm (Dennis). Common at Herm on the muddy flats facing Guernsey (Tomlin). Var. *intermedia,* Sow. Herm (Marshall).

L. oblonga, *Chem.* Herm (Dennis, Marshall). Alderney, rare, dead (Marquand). Rare at Herm; with the last species (Tomlin).

Scrobicularia prismatica, *Mont.* Alderney, in shellsand (Marquand). In dredgings between Guernsey and Herm, rare (Tomlin).

S. alba, *Wood.* Alderney, rare (Marquand). Dredged only (Tomlin). Var. *oblonga,* Marsh. Guernsey, rare (Marshall).

S. tenuis, *Mont.* Guernsey, abundant in Arnold's Pond and other brackish waters (Lukis). Herm, rare (Tomlin).

S. piperata, *Bell.* Herm, very rare (Marshall).

Solecurtus candidus, *Ren.* Channel Isles (Br. Con.) Herm (Dennis). Herm, rare, with *Lutraria* (Tomlin). Var. *oblonga,* Jeff. Guernsey (Lukis).

Solen pellucidus, *Penn.* In dredgings off Guernsey, rare (Tomlin).

S. ensis, *L.* Guernsey (Lukis). Alderney (Marquand). Herm (Marshall).

S. siliqua, *L.* Alderney (Marquand). Var. *arcuata,* Jeff. Belgrave Bay, Guernsey (Lukis).

S. vagina, *L.* Guernsey (Hanley, Marshall).

Pandora inæquivalvis, *L.* Guernsey (Marshall). Belgrave Bay, at extreme low water (Tomlin). Alderney, valves only (Marquand).

Lyonsia norvegica, *Chem.* In dredgings off Guernsey, rare (Tomlin). I have a valve from the Herm beach (Marquand).

Thracia papyracea, *Poli.* Guernsey, rare (Marshall). Alderney, very rare (Marquand). Var. *villosiuscula,* Macg. Guernsey (Marshall). Herm, common (Tomlin).

T. distorta, *Mont.* Guernsey (Br. Con.) Bordeaux Harbour, rare (Tomlin). Braye Bay, Alderney (Marquand).

Corbula gibba, *Oliv.* Channel Isles (Br. Con.)

Mya truncata, *L.* One perfect valve, Braye Bay, Alderney (Marquand).

M. Binghami, *Turt.* Guernsey and Herm, also dredged (Tomlin). Alderney, rare (Marquand).

Saxicava rugosa, *L.* Channel Isles (Br. Con.) Var. *arctica,* L. Guernsey and Herm, not common (Tomlin). Alderney, alive between tidemarks, dead in shellsand (Marquand). Var. *cylindrica,* Wood. Guernsey (Marshall).

Venerupis Irus, *L.* Guernsey, rare (Marshall).

Gastrochæna dubia, *Penn.* Channel Isles (Br. Con.) Guernsey and Herm, rare (Tomlin).

Pholas dactylus, *L.* Guernsey (Br. Con).

P. candida, *L.* Guernsey (Br. Con.)

P. parva, *Penn.* Guernsey (Br. Con.)

Teredo norvegica, *Speng.* Alderney (Lukis, Marshall). Sark (Marshall).

T. navalis, *L.* Alderney, in drift wood (Marquand).

T. pedicellata, *Quat.* Guernsey, Alderney and Sark (Lukis).

T. megotara, *Han.* Guernsey (Lukis). Var. *excisa,* Jeff. Guernsey (Marshall). Var. *mionota,* Jeff. Guernsey (Marshall).

[The following species have also been found in drift wood in Guernsey by the late Dr. Lukis: *T. malleolus,* Turt., *T. bipinnata,* Turt., *T. excavata,* Jeff., *T. bipartita,* Jeff., *T. spatha,* Jeff., and *T. cucullata,* Norm.]

SOLENOCONCHIA.

Dentalium entalis, *L.* Dredged alive between Guernsey and Herm (Tomlin). Alderney, abundant on the shell beach (Marquand).

D. tarentinum, *Lam.* Common in dredgings off Guernsey (Tomlin). Alderney, in shellsand, rare (Marquand).

GASTROPODA.

Chiton fascicularis, *L.* Guernsey and Herm, common (Tomlin). Alderney (Marquand).

C. discrepans, *Brn.* Herm (Dennis). Braye Bay, Alderney (Marquand). Widely distributed on the shores of Guernsey and Herm, but apparently becoming much rarer (Tomlin).

C. cancellatus, *Sow.* Guernsey and Herm (Marshall, Tomlin). Alderney (Marquand). Dr. Jeffreys says that "specimens from low water at Herm are larger than those dredged in the coralline zone."

C. scabridus, Jeff. North-eastern parts of Guernsey, and south-western parts of Herm (Marshall). Guernsey and Herm, on the under side of big stones buried deeply in muddy sand (Tomlin).

C. debilis, *Gray.* Off St. Martin's Point, Guernsey, 20 fms., a fine living specimen (Burkill).

C. cinereus, *L.* Very common in dredgings, small (Tomlin). Var. *Rissoi,* Payr. Guernsey, 20 fms.; Herm, between tidemarks (Marshall).

C. marginatus, *Penn.* Guernsey and Herm, very common (Tomlin). Alderney (Marquand).

C. ruber, *Lowe.* Herm, rare (Tomlin).

C. lævis, *Mont.* Occasional on the shore in Guernsey and Herm; not uncommon in dredgings on coralline ground; always small compared with Scotch examples (Tomlin). Alderney (Marquand). Sark (Br. Con.)

Patella vulgata, *L.* Abundant everywhere. Var. *elevata,* Jeff. Guernsey (Marshall). Alderney (Marquand). Sark (Br. Con.) Var. *picta,* Jeff. Guernsey (Tomlin). Alderney (Marquand). Var. *intermedia,* Knapp. Guernsey and Herm (Tomlin). Alderney (Marquand). Var. *depressa,* Penn. Guernsey (Marshall). Alderney (Marquand). Herm (Tomlin). Var. *cærulea,* L. Guernsey and Herm (Tomlin). Alderney (Marquand).

Helcion pellucidum, *L.* Guernsey and Herm (Tomlin). Alderney, alive at low water (Marquand). Var. *lævis,* Penn. Alderney (Marquand). Common at roots of *Laminaria* (Tomlin). Var. *elongata,* Jeff. Bordeaux Harbour, Guernsey (Marshall).

Tectura virginea, *Mull.* Guernsey, very large (Jordan). Alderney, alive on shore, frequent (Marquand). Common dredged, rare on shore (Tomlin). Var. *lactea,* Jeff. Herm (Marshall). Var. *conica,* Jeff. Both varieties common on shore, reaching a large size (Tomlin).

Emarginula fissura, *L.* Shores of Guernsey and Herm; also dredged (Tomlin). Alderney, occasionally alive at low water mark; plentiful on the shell beach (Marquand). Var. *subdepressa*, Jeff. Guernsey, 18 fms., and Herm, low water (Marshall). Var. *elata*, Jeff. Guernsey, 18 fms., and Herm, low water (Marshall).

E. rosea, *Bell.* Guernsey (Marshall). Alderney, frequent at the shell-beach and in shellsand (Marquand). Herm, and dredged (Tomlin).

E. adriatica, *Da C.* Two living specimens were found at Herm nearly forty years ago by Mr. J. T. Gallienne, one of which is figured in Br. Con., pl. CI. fig. 4. As no further specimens have been found since, Mr. Marshall suspects there has been some error in the record (Jour. Conch. viii. p. 30).

Fissurella græca, *L.* Guernsey and Herm, common on the shore; seldom dredged alive (Tomlin). Alderney, alive at low water, plentiful on the shell beach, sometimes large (Marquand). Var. *gibba*, Jeff. Guernsey and Herm (Marshall).

Capulus hungaricus, *L.* Young dead shells dredged between Guernsey and Herm (Tomlin). Alderney, cast up on the shell beach (Marquand).

Calyptræa chinensis, *L.* In myriads alive in dredgings between Guernsey and Herm (Tomlin). Very rare in Alderney; one specimen in shellsand (Marquand). Sark, alive (Jeffreys).

Haliotis tuberculata, *L.* Common in all the islands at low water mark, but becoming more scarce owing to persistent ormer-gathering.

Cyclostrema cutlerianum, *Clark.* Guernsey, in coralline zone, 15-40 fms. (Jeffreys). Herm (Marshall). Very rare in dredgings (Tomlin).

C. nitens, *Phil.* Guernsey, coralline zone (Br. Con.) Common in dredgings (Tomlin).

C. serpuloides, *Mont.* In dredgings between Guernsey and Herm, common (Tomlin). Alderney shellsand, rare (Marquand).

Trochus magus, *L.* Guernsey (Marshall). Alderney, rare alive (Marquand). Herm, frequent; very common dredged (Tomlin). Var. *alba*, Jeff. Cobo Bay, Guernsey (Cooke and Gwatkin). Herm, at low water (Marshall). Alderney shell beach (Marquand). Not uncommon dredged (Tomlin). Var. *conica*, Marsh. Herm, at very low water (Marshall). Occasional dredged (Tomlin).

T. tumidus, *Mont.* Dredged off Guernsey; common on coralline ground (Tomlin). Alderney, plentiful on the shell beach, rare elsewhere (Marquand).

T. cinerarius, *L.* Very common in all the islands. Var. *electissima*, Bean. Guernsey (Marshall). Alderney (Marquand). Var. *variegata*, Jeff. Channel Isles (Br. Con.)

T. umbilicatus, *Mont.* Very common in all the islands. Var. *agathensis*, Recl. Remarkably plentiful in Fermain Bay, Guernsey (Jeffreys). Alderney, common (Marquand). Herm (Tomlin).

T. lineatus, *Da C.* Guernsey, local; more common in Herm (Tomlin). Alderney, common near high water mark (Marquand).

T. montacuti, *Wood.* Guernsey (Br. Con.) Alderney, worn shells, rare (Marquand). Common dredged, on coralline ground (Tomlin).

T. striatus, *L.* Guernsey and Herm, common in Zostera beds; not dredged alive (Tomlin). Alderney, alive occasionally; dead shells common (Marquand). Monstr. *scalariforme*, Jeff. Herm (Marshall).

T. exasperatus, *Penn.* Guernsey and Herm, fairly common on the shore; seldom dredged alive (Tomlin). Alderney, alive at low water; very common dead (Marquand). Var. *pyramidata*, Jeff. Guernsey (Marshall).

T. millegranus, *Phil.* Var. *pyramidata*, Jeff. Guernsey (Jeffreys).

Trochus granulatus, *Born.* Channel Isles (Br. Con.)

T. zizyphinus, *L.* Guernsey (Br. Con.) Alderney, common (Marquand). Var. *humilior*, Jeff. Herm (Marshall). Alderney (Marquand). Guernsey and Herm, common (Tomlin). Var. *Lyonsii*, Leach. Alderney, alive at Braye Bay, dead on shell beach (Marquand).

Phasianella pulla, *L.* Guernsey and Herm, common on shore and dredged, small (Tomlin). Alderney, very common (Marquand). Var. *oblonga*, Jeff. Guernsey (Marshall). Var. *pulchella*, Recl. Guernsey and Herm, the prevailing form (Marshall).

Lacuna crassior, *Mont.* Channel Isles (Br. Con.) Alderney, frequent at the shell beach, usually much worn; rare elsewhere (Marquand). Occasional in dredgings (Tomlin).

L. divaricata, *Fabr.* Dredgings off Guernsey, not common, and small (Tomlin). Alderney shellsand, a few worn specimens (Marquand). Var. *gracilior*, Metc. Guernsey (Metcalfe).

L. puteolus, *Turt.* Channel Isles (Br. Con.) Alderney, alive at low water mark; dead shells common in shellsand (Marquand). Rare in dredgings (Tomlin). Var. *conica*, Jeff. Guernsey (Marshall). Var. *lactea*, Jeff. Guernsey (Barlee). Alderney (Marquand). Var. *clausa*, Jeff. Sark (Barlee). Var. *expansa*, Jeff. Guernsey (Marshall). Alderney (Marquand).

L. pallidula, *Da C.* Guernsey (Marshall). On weeds, not common and small (Tomlin). Var. *neritoidea*, Gould. Guernsey (Marshall). Var. *patula*, Thorpe. Guernsey (Jeffreys). Platte Saline, Alderney, alive (Marquand). Herm (Marshall). Var. *naticiformis*, Marsh. Guernsey, at low water, on some off-lying rocks (Marshall).

Littorina obtusata, *L.* Very common in all the islands. Var. *ornata*, Jeff. Guernsey, plentiful (Marshall). Var. *fabalis*, Turt. Guernsey (Marshall).

L. neritoides, *L.* Guernsey and Herm, common (Tomlin). Alderney, common on rocks at high water mark (Marquand).

L. rudis, *Maton.* Very common in all the islands. Var. *saxatilis*, Johnst. Alderney (Marquand). Var. *sulcata*, Leach. Channel Isles (Barlee). Alderney (Marquand). Var. *jugosa*, Mont. Alderney, common in shellsand, alive at Longy Bay (Marquand). Var. *patula*, Thorpe. Guernsey (Marshall). Var. *globosa*, Jeff. Guernsey (Marshall). Var. *similis*, Jeff. Guernsey (Marshall). Var. *compressa*, Jeff. Herm (Marshall). Var. *lævis*, Jeff. Guernsey (Marshall).

L. littorea, *L.* Very rare in the Channel Islands; I know of only three instances of its occurrence at Guernsey, and two at Jersey in many years (Marshall, Journ. Conch., 1898). Guernsey, very rare; I have twice taken it near Bordeaux Harbour (Tomlin). More common in Alderney, where it is of frequent occurrence in pools between tide-marks (Marquand).

Rissoa striatula, *Mont.* Guernsey and Herm, locally common, gregarious (Tomlin). Alderney, rare in shellsand (Marquand). Var. *ecarinata*, Mtros. Guernsey (Marshall). Rather commoner than type (Tomlin).

R. lactea, *Mich.* Guernsey and Herm, very rare; gregarious on the under side of big stones deeply buried in muddy sand (Tomlin). Guernsey and Herm, rare (Marshall).

R. cancellata, *Da C.* Guernsey and Herm, local, but abundant where it occurs (Marshall). Rare alive, very common dead (Tomlin). Alderney, dead shells common (Marquand). Var. *paupercula*, Jeff. A single dead and worn specimen at Herm (Jeffreys).

R. calathus, *F. & H.* Guernsey and Herm, rather common (Br. Con.) Abundant in the shellsand of Herm (Marshall). Common dead on shore and dredged; very rare alive in dredgings (Tomlin). Alderney, frequent in shellsand (Marquand).

R. cimicoides, *Forb.* Coralline zone, Guernsey (Jeffreys).

Rissoa punctura, *Mont.* Guernsey (Br. Con.) Common dead; rare living (Tomlin). Alderney, in rockpools alive, rare; common in shellsand (Marquand). Var. *diversa*, Jeff. Guernsey, 20 fms. (Marshall).

R. zetlandica, *Mont.* Guernsey (Barlee). Guernsey and Herm, occasional dead, both on shore and dredged; sometimes very fresh, but I have never found a living specimen (Tomlin). Alderney, in shellsand, very rare (Marquand).

R. costata, *Ad.* Guernsey and Herm, common dead, rare alive (Tomlin). Alderney shellsand, common (Marquand).

R. parva, *Da C.* Abundant in the littoral zone in all the islands. Var. *interrupta*, Ad. Guernsey, not common (Tomlin). Alderney, alive in rockpools at Houmet; frequent in shellsand (Marquand).

R. inconspicua, *Ald.* Guernsey and Herm, not common (Tomlin). Alderney, frequent in shellsand (Marquand). Var. *variegata*, Mohr. Guernsey, abundant (Marshall).

R. albella, *Lov.* Guernsey (Marshall).

R. membranacea, *Ad.* Guernsey, not common, on *Zostera* (Tomlin). Alderney, rare in shellsand (Marquand). Var. *minor*, Jeff. Guernsey (Marshall). Var. *elata*, Phil. Occurs singly (Tomlin).

R. violacea, *Desm.* Guernsey (Br. Con.) In dredgings, dead only (Tomlin). Alderney shellsand, frequent (Marquand).

R. costulata, *Ald.* Guernsey and Herm, littoral zone, not common (Tomlin). Alderney, dead shells frequent (Marquand).

R. striata, *Ad.* Guernsey and Herm, very common (Tomlin). Alderney, common alive and dead (Marquand). Var. *candida*, Marsh. Guernsey (Marshall).

R. proxima, *Ald.* Dredged between Guernsey and Herm, very rare (Tomlin).

R. vitrea, *Mont.* Guernsey, 20 fms. (Marshall).

R. pulcherrima, *Jeff.* Channel Isles, not uncommon (Br. Con.) Alderney, rather common alive in rockpools (Marquand). Var. *pellucida*, Marsh. Guernsey, Sark and Herm (Marshall).

R. fulgida, *Ad.* Guernsey, common on *Zostera* at Belgrave Bay, at extreme low water (Tomlin). Alderney, abundant on small seaweeds in rockpools (Marquand). Var. *pallida*, Jeff. Guernsey (Marshall). Alderney (Marquand).

R. soluta, *Phil.* Guernsey (Br. Con.) Channel Islands (Marshall).

R. semistriata, *Mont.* Guernsey and Herm, under stones, alive singly; dead shells common (Tomlin). Alderney, generally distributed but rather rare alive; common in shellsand (Marquand). Var. *pura*, Jeff. Guernsey (Br. Con.) Alderney (Marquand). Occasional (Tomlin)

R. cingillus, *Mont.* Guernsey (Marshall). Alderney, common in the littoral zone (Marquand). Herm (Tomlin). Var. *rupestris*, Forb. Locally common, with the type in Alderney (Marquand).

Hydrobia ulvæ, *Penn.* Occasional specimens in dredgings at Grand Havre, Guernsey (Tomlin). Var. *octona*, L. Arnold's Pond, Guernsey (Br. Con.) Also in the brackish ditches running across to Bordeaux Harbour (Tomlin).

H. ventrosa, *Mont.* Alderney, one specimen in shellsand (Marquand). Var. *decollata*, Jeff. Guernsey (Jeffreys). Var. *elongata*, Jeff. Arnold's Pond, Guernsey, associated with *H. ulvæ*, var *octona* (Jeffreys, Marshall). *H. ventrosa* is a fresh water species, and therefore not properly entitled to a place in this list.

Barleeia rubra, *Mont.* Guernsey and Herm, very common dead; rare alive (Tomlin). Alderney, common alive in rockpools; abundant in shellsand (Marquand). Var. *unifasciata*, Jeff. Guernsey (Marshall). Alderney, more common living than the type (Marquand).

Jeffreysia diaphana, *Ald.* Channel Isles (Br. Con.) Guernsey (Marshall). Alderney, rare (Marquand).

J. opalina, *Jeff.* Guernsey and Sark, in rockpools among Corallina (Barlee). Very abundant at Guernsey (Marshall). Alderney, common on small seaweeds in rockpools (Marquand).

Skenea planorbis, *Fabr.* Guernsey and Herm, common in the littoral zone (Tomlin). Alderney, abundant in rockpools (Marquand). Var. *trochiformis*, Jeff. Guernsey (Marshall). Var. *maculata*, Jeff. Guernsey and Herm (Tomlin). Alderney (Marquand). Var. *hyalina*, Jeff. Guernsey (Tomlin). Alderney (Marquand).

Homalogyra atomus, *Phil.* Guernsey (Marshall). Alderney, common in rockpools (Marquand). Herm, in the littoral zone (Tomlin). Var. *vitrea*, Jeff. Guernsey (Marshall).

H. rota, *F. & H.* Guernsey (Jeffreys, Marshall). Herm (Marshall).

Cæcum trachea, *Mont.* Guernsey, rare (Barlee, Marshall).

C. glabrum, *Mont.* Guernsey (Marshall). Alderney, very rare in shellsand (Marquand). In dredgings (Tomlin).

Turritella terebra, *L.* In dredgings between Guernsey and Herm, rare (Tomlin).

Truncatella truncatula, *Drap.* Guernsey (Lukis, Marshall). Sark (Marshall).

Scalaria Turtonæ, *Turt.* Guernsey (Lukis, Marshall).

S. communis, *Lam.* Guernsey and Herm, at low spring tides, among *Zostera* (Marshall). Alderney, rather common on the shell beach, rare elsewhere (Marquand) Herm, once or twice alive (Tomlin).

S. clathratula, *Ad.* Guernsey (Marshall). Alderney, a few much-worn shells in the shellsand (Marquand). In dredgings, dead and small, not uncommon ; alive rare, but very fine (Tomlin).

Aclis unica, *Mont.* Guernsey (Barlee and Jeffreys). Alderney, very rare (Marquand). Sark and Herm (Marshall). Very rare in dredgings (Tomlin).

A. ascaris, *Turt.* Guernsey (Lukis, Barlee and Jeffreys). Sark and Herm (Marshall).

A. supranitida, *Wood.* Guernsey (Hanley, Lukis and Jeffreys). Herm (Marshall). In dredgings, and on Herm beach, very rare (Tomlin).

A. Gulsonæ, *Clark.* Guernsey (Barlee and Jeffreys). Var. *tenuicula*, Jeff. Guernsey (Marshall).

Odostomia minima, *Jeff.* Guernsey, in dredged sand (Waller). Alderney, very rare (Marquand). Guernsey and Sark, 15-20 fms. (Marshall).

O. nivosa, *Mont.* Channel Isles (Br. Con.) Alderney (Marquand). In dredgings (Tomlin).

O. clavula, *Lov.* Guernsey, 18 fms. (Marshall).

O. Lukisi, *Jeff.* Guernsey (Jeffreys, Marshall). Alderney, rare (Marquand). Herm (Marshall).

O. albella, *Lov.* Guernsey and Herm, living ; and in dredgings (Tomlin). Alderney, common under stones and in rockpools between tidemarks (Marquand). Var. *subcylindrica*, Marsh. Guernsey (Marshall).

O. rissoides, *Han.* Channel Islands (Marshall). Alderney (Marquand). In dredgings (Tomlin). Var. *alba*, Jeff. Guernsey (Jeffreys). Sark (Marshall). Var. *glabrata*, F. & H. Guernsey (Marshall).

O. pallida, *Mont.* Guernsey (Marshall). Alderney (Marquand). Herm beach, and in dredgings (Tomlin). Var. *crassa*, Thomp. Channel Islands (Marshall). Var. *angusta*, Jeff. Guernsey (Jeffreys, Marshall). In dredgings (Tomlin).

Odostomia conoidea, *Broc.* Alderney, a few young specimens in shell-sand (Marquand). In dredgings (Tomlin). Var. *australis*, Jeff. Channel Isles (Br. Con.)

O. acuta, *Jeff.* Channel Isles (Br. Con.) Alderney, rare (Marquand). In dredgings (Tomlin). Var. *gracilis*, Marsh. Channel Islands (Marshall). Var. *attenuata*, Marsh. Guernsey, 20 fms. (Marshall)

O. conspicua, *Ald.* Guernsey (Jeffreys, Marshall). Alderney, very rare (Marquand). Herm shell beach (Metcalfe). In dredgings (Tomlin).

O. unidentata, *Mont.* Dredged between Guernsey and Herm (Tomlin). Var. *elata*, Jeff. Guernsey (Marshall).

O. turrita, *Han.* In dredgings (Tomlin). Var. *striolata*, Ald. Guernsey and Herm (Marshall).

O. plicata, *Mont.* Channel Isles (Br. Con.) Dredged between Guernsey and Herm (Tomlin). Alderney (Marquand).

O. insculpta, *Mont.* Guernsey (Marshall). Alderney, occasional in shell-sand (Marquand). Herm beach and dredged (Tomlin). Var. *lævissima*, Sars. Guernsey, 20 fms. (Marshall).

O. diaphana, *Jeff.* Guernsey (Jeffreys). Guernsey and Sark, 12-22 fms. (Marshall).

O. obliqua, *Ald.* Guernsey (Jeffreys, Marshall). Alderney, rare (Marquand). Herm (Hanley, Jeffreys). In dredgings (Tomlin).

O. Warreni, *Thomp.* Channel Islands (Marshall). Var. *intermedia*, Marsh. Guernsey (Marshall).

O. dolioliformis, *Jeff.* Guernsey (Jeffreys, Marshall). Herm (Marshall).

O. decussata, *Mont.* Guernsey (Jeffreys, Marshall). Herm (Marshall). In dredgings and on Herm beach (Tomlin).

O. indistincta, *Mont.* Guernsey (Jeffreys, Marshall). Alderney, very rare (Marquand). In dredgings (Tomlin). Var. *minima*, Marsh. Guernsey, 18 fms. (Marshall).

O. interstincta, *Mont* Channel Islands (Marshall). In dredgings (Tomlin). Var. *terebellum*, Phil. Guernsey and Sark (Marshall). Var. *suturalis*, Phil. Guernsey (Br. Con.)

O. spiralis, *Mont.* Guernsey, very common in dredgings off Fermain Bay (Tomlin). Alderney, common in shellsand, and on the shell beach (Marquand).

O. fenestrata, *Forb.* Guernsey (Marshall). In dredgings (Tomlin).

O. excavata, *Phil.* All the Channel Islands (Marshall). Guernsey (Metcalfe, Barlee and Jeffreys). Alderney shellsand, very rare (Marquand). In dredgings (Tomlin).

O. scalaris, *Phil.* Coralline zone, Guernsey (Hanley, Barlee and Jeffreys). Alderney, very rare (Marquand). Herm, alive, and Sark (Marshall). In dredgings and on Herm beach (Tomlin).

O. lactea, *L.* Channel Islands (Marshall) Guernsey and Herm, dead shells common on the shore and in dredgings (Tomlin). Alderney, alive at low water; dead shells common (Marquand).

O. innovata, *Monts.* (= *O. pusilla*, Jeff., Br. Con.) Guernsey and Herm (Marshall). Alderney shellsand, frequent (Marquand). In dredgings (Tomlin). Var. *nana*, Marsh. Guernsey, 20 fms. (Marshall).

O. pusilla, *Phil.* (*non* Jeff.) Guernsey (Marshall).

O. acicula, *Phil.* Guernsey (Marshall). Alderney, very rare (Marquand). Var. *turris*, Forb. Guernsey, 20 fms. (Marshall). Var. *obeliscus*, Jeff. Guernsey, 18 fms. (Marshall).

O. ventricosa, *Forb.* Channel Islands (Marshall). Guernsey (Br. Con.) Herm beach and dredged (Tomlin).

Odostomia nitidissima, *Mont.* Guernsey (Br. Con.) Sark (Marshall). In dredgings (Tomlin).

Eulima polita, *L.* Guernsey (Marshall). Alderney, common on the shell beach, rare elsewhere (Marquand). Not uncommon in dredgings (Tomlin).

E. intermedia, *Cant.* Guernsey (Barlee and Jeffreys). Alderney, rather frequent (Marquand). In dredgings, not uncommon (Tomlin). Var. *rubro-tincta*, Jeff. Channel Isles (Br. Con.) Guernsey, off Fermain Bay, 12-18 fms. (Marshall).

E. curva, *Monts* Guernsey, in 22 fms. (Marshall).

E. distorta, *Desh.* (= *E. Philippii*, Weink.) Channel Islands (Marshall). Not uncommon in dredgings between Guernsey and Herm (Tomlin). Alderney, rare (Marquand). Var. *gracilis*, F. & H. Guernsey, 18 fms. (Marshall). Dredged off Fermain Bay, rare (Tomlin). Alderney, one specimen in shellsand (Marquand). Var. *monterosatoi*, Marsh. Guernsey, 18 fms. (Marshall). Var. *exilis*, Marsh. (*antiflexa*, Monts.) Guernsey (Marshall).

E. bilineata, *Ald.* Guernsey (Marshall). Alderney, sparingly at the shell beach and in shellsand (Marquand). Dead shells in dredgings (Tomlin).

Natica catena, *Da C.* Channel Isles (Br. Con.) A reversed or sinistrorsal specimen dredged at Guernsey (Jeffreys). Alderney, worn and broken specimens at the shell beach (Marquand). Var. *conico-ovalis*, Jeff. Herm (Marshall).

N. alderi, *Forb.* Guernsey and Herm, living in sand at extreme low water mark (Tomlin). Alderney, dead shells rather common (Marquand). Var. *lactea*, Jeff. Guernsey (Marshall). Alderney (Marquand). Herm (Tomlin). Var. *subovalis*, Jeff. Herm (Marshall).

N. montacuti, *Forb.* Off Fermain Bay, Guernsey, 18 fms., a single specimen in 1874 (Marshall).

Adeorbis subcarinatus, *Mont.* Guernsey, common dead (Jeffreys). Herm, alive (Marshall). Alderney, dead shells frequent (Marquand). Guernsey and Herm, rather common dead; living specimens rare under deeply buried stones, gregarious; animal large and quite red (Tomlin). Var. *interrupta*, Marsh. Channel Islands, with the type, but rare (Marshall).

Lamellaria perspicua, *L.* Bordeaux Harbour, Guernsey, and Herm, alive at extreme low water; occasional in dredgings (Tomlin).

Velutina lævigata, *Penn.* Alderney, on the shell beach (Marquand). Young specimens dredged; dead shells on the Herm beach (Tomlin).

Aporrhais pes-pelicani, *L.* Herm, dead shells only (Tomlin).

Cerithium reticulatum, *Da C.* Alderney, dead (Marquand). Type only seen dead in dredgings (Tomlin). Var. *simplex*, Jeff. Guernsey and Herm, alive (Jeffreys). Common in the littoral zone (Tomlin). Alderney, frequent on shore alive, abundant in shellsand (Marquand). Sark (Barlee).

C. perversum, *L.* Guernsey and Herm, not uncommon at extreme low water mark; common dead (Tomlin). Alderney shellsand, common (Marquand). Var. *pallescens*, Jeff. Guernsey, dredged (Jeffreys).

Cerithiopsis tuberculariis, *Mont.* Guernsey and Herm, common alive in the littoral zone (Tomlin). Alderney, frequent alive; common dead (Marquand). Var. *nana*, Jeff. With the type (Tomlin). Alderney (Marquand). Var. *albescens*, Marsh. Guernsey (Marshall). Var. *clarkii*, Jeff. Guernsey (Jeffreys).

C. pulchella, *Jeff.* Guernsey (Jeffreys). Alderney, one specimen in shellsand (Marquand). Dredged, rare; dead only (Tomlin).

Cerithiopsis metaxæ, *D. Ch.* Guernsey, 22 fms. (Lukis and Jeffreys). Dredged, very rare, dead (Tomlin). Var. *alba*, Marsh. Guernsey, 20 fms. (Marshall).

Purpura lapillus, *L* Common in Alderney (Marquand), and probably in all the other islands.

Buccinum undatum, *L.* Guernsey and Herm, dead, rare; young ones alive in dredgings (Tomlin). Common on the shell beach at Alderney, shells often large (Marquand).

Triton nodifer, *Lam.* Coast of Guernsey, where three living specimens were trawled at different times between 1825 and 1832 (Br. Con.)

T. cutaceus, *L.* Guernsey and Herm, both living and dead specimens (Lukis, Barlee and others). Jeffreys says young shells resemble stunted specimens of *Murex erinaceus*.

Murex erinaceus, *L.* Guernsey and Herm, common on the shore (Tomlin). Alderney, rather rare alive, dead shells common (Marquand). Var. *sculpta*, Jeff. Guernsey, dredged (Jeffreys). Var. *melanostoma*, Jeff. Guernsey and Herm, fairly common on shore (Tomlin).

M. aciculatus, *Lam.* Guernsey and Herm, very common (Tomlin). Alderney, common alive and dead (Marquand) Var. *badia*, Jeff. Guernsey (Jeffreys). Very fine off Castle Cornet, 16-18 fms. (Tomlin). Alderney (Marquand). Var. *elongata*, Montes. Herm at low water (Marshall).

Lachesis minima, *Mont.* Guernsey and Herm, plentiful in the littoral zone (Tomlin). Alderney, common alive; abundant in shellsand (Marquand). Var. *pallescens*, Jeff Guernsey (Jeffreys). Alderney (Marquand).

Trophon muricatus, *Mont.* Guernsey (Br. Con.) Rare alive, common dead (Tomlin). Alderney (Marquand).

Fusus gracilis, *Da C.* Guernsey, one specimen (Lukis). Very rare, fragments only (Tomlin). Alderney shell beach, one large specimen much broken (Marquand).

Nassa reticulata, *L.* Belgrave Bay, Guernsey, living in muddy sand at extreme low water; occasionally alive at Herm (Tomlin). Alderney, not common alive; dead shells frequent, often tenanted by Hermit Crabs (Marquand).

N. incrassata, *Str.* Guernsey and Herm, common (Tomlin). Alderney, common (Marquand). Var. *major*, Jeff. Channel Isles (Br. Con.) Alderney (Marquand). Var. *minor*, Jeff. Guernsey and Herm (Tomlin). Alderney (Marquand).

Defrancia gracilis, *Mont.* Guernsey (Br. Con.) Alderney, rare (Marquand). Not uncommon dredged (Tomlin).

D. Leufroyi, *Mich.* Guernsey (Metcalfe and others). Herm (Gallienne). Rare at Herm, alive at low spring tides (Tomlin).

D. linearis, *Mont.* Guernsey and Herm, dead shells common; rare alive, on shore and dredged (Tomlin). Alderney, dead (Marquand). Var. *alba*, Marsh. Guernsey, 20 fms. (Marshall).

D. reticulata, *Ren.* Guernsey, coralline zone (Jeffreys).

D. purpurea, *Mont.* Guernsey (Br. Con.) Rare alive at low spring tides in Guernsey and Herm, sometimes very fine (Tomlin). Alderney, rare on the shell beach (Marquand). Var. *Philberti*, Mich. Channel Isles, under stones, and among *Zostera* at low water mark (Jeffreys). Dredged alive, rare (Tomlin). Var. *oblonga*, Jeff. Guernsey, 18 fms., dead (Jeffreys).

Pleurotoma striolata, *Phil.* Guernsey (Hanley).

P. attenuata, *Mont.* Guernsey (Forbes). Alderney, in shellsand (Marquand). Sark (Barlee). Dredged, dead only (Tomlin).

Pleurotoma costata, *Don.* Alderney shell beach, and in shellsand (Marquand). In dredgings, dead only (Tomlin).

P. nebula, *Mont.* In dredgings between Guernsey and Herm, dead, rare (Tomlin). Alderney, two young specimens in shellsand (Marquand). Var. *elongata*, Jeff. Guernsey, in deep water (Hanley and Jeffreys). On coralline ground, alive, very rare (Tomlin).

P. lævigata, *Phil.* Belgrave Bay, Guernsey (Gallienne). Var. *minor*, Jeff. Channel Isles, coralline zone (Br. Con.)

P. septangularis, *Mont.* Guernsey (Jeffreys). Alderney, one specimen on the shell beach (Marquand). Dredged on coralline ground, not uncommon (Tomlin).

P. rufa, *Mont.* Guernsey and Herm, dead shells common; rare alive on shore and dredged (Tomlin). Alderney (Marquand). Var. *lactea*, Jeff. Belgrave Bay, Guernsey, alive, and dredged in 18 fms. (Gallienne and Jeffreys). Var. *semicostata*, Jeff. Channel Isles (Jeffreys). Alderney, common on the shell beach, rare elsewhere (Marquand). Var. *prælonga*, Marsh. Guernsey, 20 fms., rare (Marshall).

P. turricula, *Mont.* Herm beach (Tomlin).

Marginella lævis, *Don.* Guernsey (Br. Con.) Alderney shell beach (Marquand). Dredged alive on coralline ground, rare; dead shells occasional at Herm (Tomlin).

Cypræa europæa, *Mont.* Guernsey and Herm, common on shore and dredged; the spotless form prevailing (Tomlin). Alderney, common living at low water; abundant on shell beach (Marquand). Var. *minor*, Marsh. Guernsey (Marshall). Alderney (Marquand). Herm (Tomlin).

Ovula patula, *Penn.* Guernsey and Sark (Br. Con.) I possess a fine specimen found on the beach at Herm (Marquand).

Cylichna umbilicata, *Mont.* Dredged between Guernsey and Herm, dead only, rare (Tomlin).

C. cylindracea, *Penn.* Guernsey (Br. Con.) Dredged dead, rare (Tomlin).

Utriculus mammillatus, *Phil.* Channel Isles (Br. Con.) Dredged dead, rare (Tomlin).

U. truncatulus, *Brug.* Alderney, rare in shellsand (Marquand). Common in dredgings, dead (Tomlin).

U. obtusus, *Mont.* Alderney, common in shellsand; one specimen alive at Platte Saline (Marquand). Var. *Lajonkaireana*, Bast. Channel Isles, in deep water (Jeffreys). Alderney, common (Marquand). In dredgings, dead shells common (Tomlin).

U. hyalinus, *Turt.* Guernsey (Br. Con.) Dredged dead, rare (Tomlin).

Acera bullata, *Mull.* Guernsey (Hanley).

Actæon tornatilis, *L.* Two good specimens found in the Alderney shellsand, and one on the Herm beach (Marquand).

Bulla hydatis, *L.* Sark, 15-20 fms. (Jeffreys).

Scaphander lignarius, *L.* Guernsey (Br. Con.) Alive in St. Peter-Port Harbour (Tomlin). Alderney, two rather poor specimens washed up in different places (Marquand).

Philine catena, *Mont.* Guernsey (Barlee and Jeffreys).

P. punctata, *Cl.* Guernsey (Jeffreys, Marshall). Var. *cingulata*, Marsh. Guernsey, in 20 fms., very sparingly with type (Marshall).

P. aperta, *L.* Channel Isles (Br. Con.) Belgrave Bay, Guernsey, at low water spring tides (Tomlin).

Aplysia punctata, *Cuv.* Common in Guernsey about June, when it comes in to spawn; I have seen it in thousands from Fermain to Bordeaux Harbour (Tomlin).

Aplysia depilans, *L.* Guernsey, in a few fathoms outside the harbour, among *Zostera* (Gallienne).

Pleurobranchus plumula, *Mont.* Guernsey (Br. Con.) Occasional in the littoral zone, under stones in Guernsey and Herm (Tomlin). Var. *alba*, Marsh. With the type (Tomlin).

Limapontia nigra, *Johnst.* Occasional on seaweeds (Tomlin).

Elysia viridis, *Mont.* Common on *Codium tomentosum* (Tomlin).

Fiona nobilis, *A. & H.* Dredged off Jersey (Tomlin).

Eolis papillosa, *L.* Occasional under stones (Tomlin).

E. Landsburgi, *A. & H.* Channel Islands (Ansted).

E. glaucoides, *A. & H.* Herm, under a stone at low water mark (Alder).

Doto pinnatifida, *Mont.* Guernsey (Alder).

Tritonia lineata, *A. & H.* Channel Islands (Ansted).

Crimora papillata, *A. & H.* Moulin Huet Bay, Guernsey, in shallow water (Norman).

Idalia elegans, *Leuc.* Near Castle Cornet, in 15 fms. (Alder).

Doris testudinaria, *Riss.* Herm (Brady and Hodge).

D. bilamellata, *L.* Sometimes common (Tomlin).

Assiminea littorina, *D. Ch.* Alderney, common in *Lichina pygmæa* at high water mark (Marquand). Sark (Br. Con.)

Melampus bidentatus, *Mont.* Guernsey and Herm, common under stones about half-tide, or higher (Tomlin). Alderney, occasional under stones; frequent in shellsand (Marquand). Sark (Br. Con.)

M. myosotis, *Drap.* Grande Mare, Guernsey (Tomlin).

Otina otis, *Turt.* Locally common in Guernsey, Sark and Herm (Tomlin). Var. *candida*, Jeff. Fermain Bay, common (Tomlin). Sark, in a cave (Br. Con.)

CEPHALOPODA.

Ommatostrephes sagittatus, *Lam.* Guernsey (Gallienne and Cooper).

Sepiola Rondeleti, *Leach.* Dredged between Guernsey and Herm (Tomlin).

Sepia elegans, *D'Orb.* Guernsey (Lukis).

S. biserialis, *De Mont.* Guernsey (Lukis).

Octopus vulgaris, *Lam.* Guernsey and Herm (Br. Con.)

THE RAINFALL OF GUERNSEY FOR THE YEAR 1901.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

THE same four stations reported on in previous years are compared and their results discussed in this paper. I wish to take this opportunity of thanking the gentlemen named for their co-operation.

The details of the stations are the same as last year and are given in Table I.

TABLE I.

Observer.	Position.	Elevation.
Carey, Mr. J.	Claire Mare, Perelle	50 feet.
Collenette, Mr. A...	Beaulieu, Hauteville.....	190 ,,
Hocart, Mr. J.	Les Mielles, l'Ancresse.....	33 ,,
Rowswell, Mr. B. ..	Les Blanches, St. Martin's ..	300 ,,

GUERNSEY RAINFALL, 1901.

TABLE II. FOUR STATIONS AND AVERAGE.

Months.	HAUTEVILLE.		CLAIRE MARE.		LES BLANCHES.		L'ANCRESSE.		
	Monthly Totals, 1901.	Monthly Means for the last Five Years	Monthly Totals, 1901.	Monthly Means for the last Five Years	Monthly Totals, 1901.	Monthly Means for the last Five Years	Monthly Totals, 1901.	Monthly Means for the last Five Years	The 59 Years' Average.
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
January	1·47	3·17	1·08	2·50	1·55	2·94	1·19	2·51	3·82
February	1·78	3·39	1·23	2·91	1·50	3·08	1·47	3·26	2·62
March	3·62	2·56	3·51	2·25	3·48	2·01	3·90	2·47	2·47
April	4·73	3·15	3·74	2·51	4·50	3·11	3·91	2·56	2·33
May	1·25	2·40	1·17	1·99	1·24	2·46	1·12	2·24	2·16
June	0·55	1·98	0·34	1·54	0·66	1·91	0·37	1·56	2·00
July	1·06	1·02	0·70	0·80	0·99	0·98	0·86	1·00	2·20
August	1·69	2·61	1·23	2·09	1·43	2·42	1·25	2·09	2·40
September	2·21	3·26	1·65	1·91	1·91	2·27	1·68	2·01	3·12
October	3·26	2·81	2·33	1·71	3·35	2·60	2·93	2·16	4·85
November	1·84	3·93	1·50	3·54	1·86	3·65	1·32	3·24	4·41
December	4·51	5·13	3·44	3·95	4·13	4·74	4·18	4·39	4·16
1st Three Months	6·87	9·12	5·82	7·66	6·53	8·03	6·56	8·24	8·91
2nd ,,	6·53	7·53	5·25	6·04	6·40	7·48	5·40	6·36	6·49
3rd ,,	4·96	6·89	3 58	4·70	4·33	5·67	3·79	5·10	7·72
4th ,,	9·61	11·97	7·27	9·20	9·34	10·99	8·43	9·79	13·42
The Year	27·97	35·51	21·92	27·60	26·60	32·17	24·18		36·54
3 Wettest Months	12·86		10·79		12·11		11·99	29·49	13·42
3 Driest ,,	2·76		2·21		2·89		2·35		6·36

The detail given in the 2nd table shows that the year has been a very dry one.

The year commenced with a deficit for the first two months but March and April were above the average, the latter month proving the wettest of the year. May fell off remarkably and June proved the driest month of the year (this is consistent with the averages). A regular and steady rise occurred through July, August, September and October. The latter month gave 1·47 inch less quantity than April, though October is the wettest month of the year on the average. December was also a wet month, though it did not reach April's totals by 0·09 inch The averages of 59 years show a steady fall from January to June, a rise from June to October, from which month a decline in quantity takes place through November and December. The year 1901 is therefore very abnormal in the distribution besides being deficient in quantity.

Taking the accumulated rainfall as a guide we find that the average fall was reached and slightly passed in April, but with that exception the curve of the year is well below, all along its length, the average curve. The year yielded 27·97 inches against the average of 36·54 inches, a deficiency of 8·57 inches.

The table shows that the observations taken at the country stations are consistent with the above results, but the falls being, as usual, lighter in quantity than at Hauteville the curves are modified. The curve taken from the mean of all four stations does not touch the 59 years' curve anywhere but is consistently below it.

Only three years, since the record was commenced in 1843, have given smaller falls than this year. These were 1870 with a total of 25·0 inches; 1858 with 25·5 inches, and 1844 with 27·6 inches. 1901 must therefore rank not only as a dry year but as an exceptionally dry one.

The variations in the monthly totals of the four stations can be studied from the table given. It will be sufficient for me to draw your attention to the general agreement of the curves shown with each other. The month of May varied but little in quantity at any of the stations, the greatest differences being found in April, October and December. The differences are consistent with the results of former years but not as great as is usual. This no doubt is the effect of the diminished rainfall.

TABLE III.

MEAN RESULTS OF THE FOUR STATIONS COMPARED WITH HAUTEVILLE AND A CORRECTED MEAN RAINFALL FOR THE WHOLE ISLAND DEDUCED THEREFROM.

Months.	Mean for 4 stations. Period 1897-1901, Five Years.	Mean for Hauteville. Period 1897-1901, Five Years.	Differences between Columns 1 and 2, being excess of Town over Island Rainfall.	Differences between Columns 1 and 2 published last year for the 4 year period.	The average Rainfall. 59 years' period.	The average Rainfall, corrected by application, of Amounts in Column 3.	The average Rainfall corrected with last year's Amounts (= Column 4).	Wet days for Hauteville, 1897-1901.	Wet days for Four Stations. Period 1897-1901.	Differences between Columns 8 and 9.
	1	2	3	4	5	6	7	8	9	10
January ..	2·78	3·17	0·39	0·51	3·82	3·43	3·36	22	21	− 1
February ..	3·16	3·35	0·19	0·18	2·62	2·43	2·47	17	14	− 3
March	2·32	2·56	0·24	0·11	2·47	2·23	2·34	17	16	− 1
April.....	2·83	3·15	0·32	0·26	3·33	3·01	2·04	17	17	− 3
May	2·27	2·40	0·13	0·64	2·16	2·03	1·52	12	9	—
June	1·77	1·98	0·21	0·90	2·00	1·79	1·20	9	8	− 1
July	0·95	1·02	0·07	0·05	2·20	2·13	2·18	7	6	− 1
August	2·30	2·61	0·31	0·33	2·40	2·09	2·08	14	10	− 4
September..	2·36	2·46	0·10	0·27	3·12	3·02	2·86	13	13	—
October....	2·32	2·85	0·53	0·44	4·85	4·32	4·45	16	16	—
November..	3·59	3·93	0·34	0·62	4·41	4·07	3·84	15	16	+ 1
December..	4·55	5·13	0·58	0·62	4·16	3·58	3·53	21	21	—
Totals	31·20	34·61	3·41	4·86	36·57	33·16	31·88	180	167	− 13

I have given in Table III. the mean rainfall of all the stations, compared with that of Hauteville, for the period of five years. The Hauteville curve for this period varies very much from the 59 years' average.

This period gives lower quantities of rain for the months January, July, October, September and November, greater rainfall for February, April, May and December, while March, June and August are so near the average that they may be looked upon as normal.

We thus see that 1901 gave more rain in the spring and less in the autumn than usual, and that this is also true of the mean of the last five years. These curves suggest further study of previous short periods, but I have not found it possible to devote time to this investigation so far.

The total mean annual rainfall for the period of five years for each station is not given, owing to the labour and time required to produce the tables, but the mean of all the stations for this period is found to vary from the mean of Hauteville, for the same period, by 3·41 inches and from the average of 59 years by 5·37 inches.

The corrected rainfall for the island, as shown by these differences, is 33·16 inches instead of 36·57 inches. The island is thus proved to be drier than the town. The cause of this difference I have discussed in previous papers; it is therefore unnecessary for me to repeat my former arguments.

TABLE IV.

THE WET DAYS OF EACH STATION COMPARED WITH THE AVERAGES.—1901.

	Hauteville.	Claire Mare.	Les Blanches.	L'Ancresse.	Averages.		
					Of 1901.	4 Stations. Five Years.	Of 59 Years.
January	22	17	19	16	18	21	19
February	13	11	16	11	12	14	15
March	23	21	23	22	22	16	15
April	19	19	18	18	18	17	13
May	9	8	8	7	8	9	11
June	4	2	4	4	3	8	11
July	8	5	7	6	6	6	11
August	9	7	7	8	7	10	12
September	17	11	14	11	13	13	14
October	16	16	16	15	16	16	19
November	13	13	14	13	16	16	19
December	23	21	25	22	24	21	19
The Year	176	151	171	153	163	167	178

In Table IV. I give the wet days at all the stations with a mean for 1901 and for the five year period, as well as the average of the 59 years.

At Hauteville the wet days for the year were 176 against the average of 177. There were more wet days (though smaller fall) right up to October, but the greatest variation from the average was in the spring.

A study of the monthly totals shows that variation was wild owing to the wetness of March and April and the dryness of May to August.

The combination of the wet days of the whole of the stations gives an easier curve, which is above the average curve, for the first six months of the year and below for the last six months. The same is found to be true of the monthly mean totals of all the stations together.

Last year's droughts occurred as follows :—

TABLE V.

May 10 to 28	19 days	At	Hauteville, Claire Mare (18), Les Blanches and l'Ancresse.
June 2 to 18	17 ,,	At	Claire Mare (18) and l'Ancresse.
July 2 to 22	21 ,,	At	l'Ancresse.
October 26 to November 10	16 ,,	At	Hauteville, Claire Mare, Les Blanches and l'Ancresse.

Falls of 1 inch and over in one day occurred as follows:—

Hauteville	April 3rd	1·03 inch.
Les Blanches	October 4th	1·07 ,,

On these dates the other stations registered as follows:—

April 3rd	Claire Mare	0·82 inch.
,,	Les Blanches	0·85 ,,
,,	L'Ancresse	0·80 ,,
October 4th	Hauteville	0·93 ,,
,,	Claire Mare	0·52 ,,
,,	Les Blanches	0·72 ,,

NOTE.—This paper was illustrated by means of "Curves" projected by the Lantern, but which cannot be reproduced owing to the cost entailed.

DISCOVERY OF AN ANCIENT STONE IMPLEMENT EMBEDDED IN CLAY AT ST. MARTIN'S.

BY MESSRS. T. DOMAILLE AND G. T. DERRICK.

WHILE digging at a depth of about 3 ft. 6 in. underneath a greenhouse on the premises of Mr. P. Domaille, at Roque Hamclin, Rue Caches, St. Martin's, the workmen found in the apparently undisturbed clay a stone about 14 in. long by 7 in. by 7 in. It was lying face uppermost, and had at its foot four small pieces of stone which may perhaps at one time have served to support the principal stone. The clay was as usual in a mass with occasional streaks, according to the greater or less proportion of sand it contained, and free from stones or pieces of rock; but about 6 ft. N.W. of this spot at about the same depth was found a piece of sand-stone, which appears to have been used as a sharpener, also three or four flint chips. These last and the large one specially referred to are all foreign stones, *i.e.*, no rock from which they could have been broken is found in Guernsey. The nearest places of origin are Alderney and France.

The large implement was formed from a pebble or boulder of coarse sand-stone: one end of it was broken off to a desired shape, *i.e.*, a concave curve, and then the fractured surface rubbed down smooth. Across the face of this prepared surface are grooves, from which it is concluded that it was intended to be used as a mealing stone, that is, for rubbing down grain.

Consulting Evans' "Ancient Stone-implements of Great Britain," a somewhat similar stone is figured on p. 225. The author says: "Such stones are used among the Kaffirs and in W. Africa . . . in Abyssinia and in S. America. They have occasionally been found in Great Britain; the figure shows a pair found in a hut-circle at Ty Mawr in Anglesea. . . . The name Saddle-quern has been given to this form of grinding

apparatus." It has been suggested that this Guernsey stone may have been used for sharpening stone implements, but as these are generally narrower than the stone, they would have produced irregularities in the smoothed surface of the stone in the direction of its length. No such marks appear.

Whatever was the special use of our stone, it is some kind of Neolithic implement, so its discovery is of great importance as giving a clue to the age of the clay deposit of the island. Such a stone could not have been brought here in the waters of the flood, which deposited the clay on our highest lands. It must have been brought here by man from its place of origin, Alderney or France, and used near the locality where it was found. It may have been carried some short distance, and then surrounded and covered by the clay deposit. Accepting the statement that the clay was undisturbed, we have proof that it was deposited during or subsequent to the Neolithic period. The dolmen are also supposed to be the work of Neolithic man, but are bedded in the clay, and are therefore subsequent to it; so that our stone belongs to an early Neolithic period, and the Cromlechs to a later one, and the island was inhabited in both eras.

GUERNSEY SUNSHINE FOR 1901.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

THE year 1901 has been below the average by 68 hours. It stands the highest of those years which have fallen below the average and is the fifth best year out of the eight of which I now have a record.

TABLE I.

GUERNSEY SUNSHINE.

EIGHT YEARS' TOTALS, MEAN AND COMPARISONS.

Years.	Annual Totals. *Hours.	*Hours below the Sunniest Year, 1899.	*Hours above or below the Average of 8 Years.	Percentage of Possible.	Sunless Days.	Sunniest Month. Hours.	Sunniest Month. Month.
1894	1724	490	—244	38	49	230	May.
1895	2069	145	+ 91	46	50	310	May.
1896	1825	389	—143	41	61	307	May.
1897	1874	340	— 94	42	53	305	July.
1898	2090	124	+122	47	40	338	July.
1899	2214	—	+247	49	43	340	July.
1900	2026	188	+ 58	45	51	326	July.
1901	1897	317	— 71	42	50	276	May.
Mean..	1968	249	—	44	49	338	July.

* Decimal places have been omitted. The nearest whole number is used.

In the first table I give the sunshine of each year, and by it you will see that there are four years above and four below the the average.

The sunshine increased in quantity progressively in 1897, 1898 and 1899. In the latter year the apex of the curve was reached, for the two last years show a progressive fall.

The sunless days of the period have ranged between 61 in 1896 and 40 in 1898.

TABLE II.

SUNSHINE AT BEAULIEU, HAUTEVILLE, GUERNSEY, DURING 1901.

Months.	Monthly Totals.		Hours.				Sunless Days.		Possible Sunshine.	
			Average 8 Years.							
	1901. Monthly.	Accumulating Totals, 1901.	Monthly.	Accumulating.	Above.	Below.	1901.	Average.	Percentage of 1901.	Monthly Totals.
January	65·56	65·56	55·54	55·54	10·06	—	7	10	24	269·20
February	44·60	112·16	84·60	140·14	—	40·00	7	7	15	294·39
March	83·63	195·79	141·29	281·43	—	57·66	6	3	22	367·59
April	220·04	415·83	194·02	475·45	26·02	—	3	1	54	408·58
May	276·65	692·48	261·29	736·74	15·36	—	1	1	58	472·79
June	272·63	965·11	270·48	1007·22	2·15	—	0	0	56	481·30
July	270·68	1235·79	287·48	1294·70	—	17·20	1	1	55	484·46
August	270·22	1506·01	254·36	1549·06	15·86	—	1	1	61	442·64
September ..	155·86	1661·87	190·57	1739·63	—	34·71	1	1	41	376·74
October.....	120·37	1782·24	116·61	1856·24	3·66	—	5	3	35	331·43
November ..	71·50	1853·74	68·97	1925·21	2·53	—	8	8	26	271·07
December....	43·21	1896·95	43·57	1968·78	—	0·36	10	11	16	255·15
The Year ..	1896·95	1896·95	1968·78	1968·78	—	71·83	50	47	42	4454·82

January commenced the year with 10 hours over the average, but February gave 40 below the average, and thus caused the curve to fall. March was 57 hours short, and although the rest of the year actually exceeded the average the loss of these two months was never caught up.

The sunshine normally increases through May and June to a maximum in July. This year, however, there was no rise after May, during which month the highest total was obtained. The peculiarities of the year may be studied from the table.

A comparison of the sunniest and least sunny years with 1901 proves that in the summer months 1901 occupied a middle position. See Table III.

TABLE III.

SEVEN YEARS' RECORD OF SUNSHINE IN GUERNSEY.

Months.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	8 years' average.
January	64·85	63·28	39·91	42·44	66·71	49·72	45·88	65·56	55·54
February	87·02	111·26	98·92	63·79	85·95	118·90	65·43	44·60	84·60
March	196·77	168·08	110·10	146·59	93·24	209·90	121·96	83·63	141·29
April	191.77	191·21	171·41	163·29	224·33	156·26	233·88	220·04	194·02
May	230·01	309·74	307·02	239·85	204·35	245·55	277·93	276·65	261·29
June	215·31	294·50	301·86	269·29	273·48	314·37	222·42	272·63	270·48
July	187·20	254·61	277·73	305·62	337·73	339·93	326·33	270·68	287·48
August	186·43	244·84	234·20	239·19	265·15	325·57	269·54	270·22	284·36
September ..	155·16	269·41	107·28	142·23	267·07	185·71	241·83	155·86	190·57
October	91·86	91·35	85·18	120·74	128·79	152·57	142·02	120·37	116·61
November ..	74·53	62·10	68·96	66·30	94·62	73·86	39·90	71·50	68·97
December....	44·20	17·95	38·12	75·15	48·99	41·94	38·83	43·21	43·57
The Year..	1724·47	2068·93	1825·56	1874·48	2090·41	2214·28	2025·95	1896·95	1968·78

In sunless days the months March, April and October were above the average. February, May, June, July, August and September were equal to the average, January and December only fell below.

The result on the annual curve was that the curve of the year crossed that of the average in March and remained above for the rest of the year.

The mean and average sunshine per day in each month is given in Table IV.

TABLE IV.

Months.	Daily Mean for 1901.	Average Daily Mean for 8 Years.
January	2·1	1·7
February	2·4	3·0
March	2·6	4·5
April	7·8	6·4
May	8·6	8·4
June	9·0	9·0
July	8·7	9·2
August	8·7	8·2
September	5·1	6·3
October	3·8	3·7
November	2·3	2·2
December	1·4	1·4
The Year	6·1	6·3

Deduced from Monthly Totals.

A HAIL SHOWER AND ITS LIMITS.

BY MR. BASIL T. ROWSWELL.

WE all know that in showery weather the rain-laden clouds deposit more water over some parts of the island than over others. The blackest portion of one shower will sometimes be seen travelling across the Vale and St. Sampson's, while the other parishes comparatively escape. At other times the southern districts get the downpour and the lowlands the sprinkling only from the outskirts of the cloud.

On Friday evening, November 15th, 1901, a shower passed over the island showing this peculiarity in a very marked degree. During Thursday night temperature fell quickly owing to a clear sky, with little or no wind. Steadily the fall went on as night progressed till in the screen at Les Blanches the instrument stood at 30·1°. Two degrees of frost in the air was thus indicated, and all exposed water was found to have a coating of ice. Friday morning turned out very fine and sunny, but the afternoon brought an increase of cloud, and at 5.30 o'clock the shower referred to began. In town hail fell heavily and steadily for nearly an hour, and when it ceased the streets were in a frightfully slushy state. The hail lay in a half-thawed condition a full inch deep, and prevented the water running away quickly. As may be imagined walking was most unpleasant and wet feet unavoidable. The conditions were, in fact, what one experiences when a thaw sets in after a smart snowfall.

All up Hauteville and George Road this state of things prevailed. Front gardens and lawns were white with the deposit, while walking was a constant slipping back, crunching of melting hail and splashing in icy cold water. After passing the "Magazine" along the Fort Road, the conditions suddenly and rapidly improved, and by the time the houses, some four hundred feet further south, were reached, the slush and water had completely disappeared and only a little hail was seen fringing the footpath on the Fort Field side, while

beyond Morley Chapel no trace of hail could be found and the road indicated that the shower must have been very slight there. This was at 7 o'clock, about half an hour after the end of the shower, and the sky was clearing decidedly. Low down in the south-west the crescent moon was visible, while in the east and south-east a heavy bank of cloud was moving away—evidently the retreating shower.

At Les Blanches some rain fell with a little hail, but at 7.30 no trace of the hail could be found on the grass, while a measurement of the water in the gauge showed that the shower had only yielded 0·03 in. of water. Temperature in the screen at 7.30 was 38·0 degrees.

It was, of course, entirely owing to the shower being one of hail, and very heavy, that the line of demarcation (though so well marked) was noticeable. A map of the shower area would, I am sure, prove very interesting. On the main road from the Forest into town the slush and water commenced at the "Elms," near Mr. Ozanne's windmill, a spot just about due west of the "Magazine" along the Fort Road, and half a mile distant as the crow flies. This would seem to indicate a west to east, or east to west direction of movement for the shower. The wind was very light in force that day, and variable in direction, but on the whole, was westerly, and I am inclined to think that the cloud was moving towards the east or south-east. At St. Sampson's the shower is reported not to have occurred, and evidently did not at Claire Mare, at St. Peter's, as Mr. Carey had only 0·03 in. in his gauge on Saturday morning. During Friday night another slight shower occurred at Les Blanches, making a total rainfall of 0·06 in. for the twenty-four hours, Mr. Collenette's total rainfall for the twenty-four hours is 0·31 in., all, or practically all, of which he believes fell during Friday evening's shower.

The driver of the St. Martin's (Fort Road) 'bus tells me that the shower began at 5.25 p.m., and that when going up Hauteville and George Road a quarter of an hour later the road was then quite white. His reply to my query as to how far towards St. Martin's the ground was covered with hail was "As far as the houses along the Fort Road." This, it will be seen, agrees with my experience an hour later. The 'bus driver also said that the hail lay at least two inches deep on the top of the 'bus, a fact which startled and surprised the St. Martin's people very considerably, no hail having fallen there as already stated.

June 19, 1903
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GUERNSEY

SOCIETY OF NATURAL SCIENCE

AND

LOCAL RESEARCH.

REPORT AND TRANSACTIONS

1902.

Guernsey:
BICHARD'S PRINTING AND PUBLISHING COMPANY, LTD.
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Rules of the Guernsey Society of Natural Science and Local Research.

1.—That this Society shall be called "The Guernsey Society of Natural Science and Local Research."

2.—That the main objects of the Society shall be the study and investigation of the Fauna and Flora, Geology, Meteorology, Archæology, Folk-lore and Language of the islands of Guernsey, Alderney, Sark, Herm and Jethou (commonly called the "Bailiwick of Guernsey"), the holding of meetings for the reading and discussion of papers, the exhibition of specimens, and the publication from time to time of such papers and notes as may be deemed worthy of permanent record.

3.—That the annual subscription shall be five francs, payable in advance on the 1st of January.

4.—That persons desiring to join the Society shall be proposed by two Members at one of the Ordinary meetings and balloted for at the next meeting.

5.—That the Council or governing body of the Society shall consist of a President, one or more Vice-Presidents, an Honorary Secretary, an Honorary Treasurer, and six ordinary members, all of whom (except the Vice-Presidents) shall be elected by ballot at each Annual General Meeting; and of these five shall form a quorum.

6.—That no Member shall hold the office of President for more than two years in succession; the retiring President then becoming a Vice-President.

7.—That ordinary meetings for the reading of papers, exhibition of specimens, recording of notes, field work, &c., shall be held once every month throughout the year, notice of

the same being sent to each member, and such meeting shall be free to members and friends introduced by them.

8.—That Annual Sectional Reports be received and read at the December meeting, but the Annual Meeting to receive the Report and Balance Sheet of the out-going Council, and for the Election of Officers be held in January of each year; and that notice of the January meeting be sent to each member seven days previously.

9.—That the Council shall make such arrangements as may be required, from time to time, for Ordinary meetings, Excursions, Professional Lectures, Exhibitions, &c.; and the right is reserved to the Council under certain circumstances, of fixing a price of admission for members or for non-members.

10.—That notice of the meetings of the Council shall be issued by the Secretary at least three days before each meeting, intimating its object.

11.—That on receipt of a request in writing signed by any five members, the Secretary or Acting Secretary shall convene an Extraordinary meeting within two weeks of the receipt of such request.

12.—That notice of an Extraordinary meeting of the Society shall be sent to each member not less than seven days before such meeting.

13.—That the Society shall publish Transactions annually, each Member shall receive one copy free of charge.

That no addition to or alteration of these rules shall be made except by a majority of three-fourths of the members present at an Annual General Meeting, or at an Extraordinary General Meeting convened for the purpose, fourteen days' notice of such proposed alteration or addition being sent to each member.

TRANSACTIONS OF THE SOCIETY.

Monthly Meeting held January 15th, 1902, Mr. W. A. Luff in the chair.

Mr. R. Mabbs was elected a member.

The Secretary reported the receipt of a letter from Mr. W. Davidson, of Les Merriennes, enquiring about the Guernsey lizard, mentioned in White's Natural History of Selborne. The animal, so designated, is *Lacerta viridis*, the green lizard; Guernsey has no special claim to it, it is far commoner in Jersey, and is found in France. It has become rare here, though it may still be seen occasionally near the shore from the Fort to Fermain Bay.

The present Council was authorised to remain in office until their successors were elected.

Mr. A. Collenette then gave his annual lecture on the Rainfall and Sunshine of Guernsey in 1901; it will be published in the *Transactions*. Numerous diagrams illustrating the facts, were thrown on the screen by the electric lantern. A hearty vote of thanks was awarded to Mr. Collenette for the interesting and useful information his lecture contained, and for the great pains and time he had taken in preparing the diagrams.

Monthly Meeting held on February 19th, 1902, Mr. W. Sharp, President, in the chair.

Mr. Luff showed specimens of Butterflies from Brazil, which are specially noted as examples of insects protected from the assaults of insectivorous creatures by the close resemblance they bear to leaves when they are resting upon plants.

Mr. A. Collenette then read a most interesting letter which he had received from Mr. C. A. Renouf, late of the Commercial Arcade, Guernsey, now at Dawson City. It particularly draws attention to the frozen condition of the

ground some feet below the surface, even during the summer season; miners pass through clear ice when sinking shafts, after clearing away moss and upper earth. Mr. Renouf also thoughtfully forwarded specimens of plants in bloom in that region.

Mr. Derrick then gave some interesting information on Vitrified Forts, his attention having been drawn to them during a tour in Scotland in 1901, when he visited one at Knock Farrel, near Strathpeffer, north of Inverness. They are numerous in north Scotland, and occur in Brittany, but none are recorded yet from England. They resemble the hill forts so common all over England, but the ramparts of these consist of earth, whereas those of vitrified forts consist of stones, usually broken to a moderately small size. The ramparts have then been subjected to heat sufficient to melt the siliceous particles of the stone, which forming a kind of glaze cements the material together. Mr. S. Baring-Gould in his book entitled "Brittany," published in 1901, describes one at Péran, near Poulfragan, near St. Brieuc. Like all the Scotch ones it is elliptical, being 400 feet by 330 feet. The rampart is of loose stones put together without order, 12 feet wide at base, 4 feet at top, 7 feet high. The hearths on which the fires were kindled were from 12 to 16 feet apart. Where the heat was most intense there is a core of glass from top to bottom; where weak, there is a pudding of vitrified matter from 3 to 6 feet thick; where insufficient, there is only a glaze on the surface of the stones. Tradition says that fires were maintained for seven years; but experiment proves that fire in full blast for 15 days would have produced like results. In Scotland, they are all strengthened by one or more outer defences; some have paved causeways leading to the entrance. They show signs of two periods of occupation. In exploring one at Inverfaragaig, near Foyers, which is on a bare outcrop of granite rock overlooking Loch Ness, they found in the centre a collection of smoothed pebbles, which must have been carried up from the lochside. Mr. Derrick's Scotch correspondent, Mr. T. Wallace, of Inverness, says: "For what purpose the trouble of carrying them up was undertaken, it is hard to say," he suggests, "To please the bairns." But as exactly the same thing occurs in the fort at Jerbourg, in Guernsey, Mr. Derrick thinks they were to be used as weapons in defending the place. The great question is: "To what period do these constructions belong?" There is a tendency, as with all antiquities, to refer them to very ancient times; but Mr. Derrick suggests that they probably date from A.D. 50 to A.D. 500. They were

thrown up by a people who could not make or use mortar, yet they are improvements upon the original earthen enclosures. They occur in two districts in which the inhabitants had been brought in contact with Roman walled enclosures, but maintained their independence of the great conquerors. Having learned from forest fires the means of producing vitrification, they employed it to make their camps resemble, to that extent, the Roman towns enclosed by walls. The paved causeways are copied from the Roman military roads. The custom of constructing such enclosures did not last long; the same camps may afterwards have been occupied during the Saxon and Scandinavian invasions.

Information is requested on those existing in Brittany :— (1) Are they always on high ground? (2) Do they ever occur far from the sea? (3) Are they always ellipitical? (4) Have the stones composing the ramparts been first broken into small fragments? (5) Is the vitrification complete or partial? (6) Is it on the outside or top of the rampart only or also on the inner slope?

An animated discussion took place on this subject thus brought for the first time under the consideration of members.

Mr. Collenette then gave particulars of the "Casts of the gigantic eggs of certain extinct birds" which have recently been added to the museum.

[No meeting was held in March, as the Guille-Allès Concert took place on our usual evening.]

Monthly Meeting held April 16th, 1902.

The Secretary reported that Mr. E. D. Marquand had discovered *Isoëtes* growing on the cliffs of Alderney, and had forwarded specimens. This is a most interesting find, Guernsey having been the furthest north and the only station for this curious Quill-wort in this district. In Guernsey it was originally discovered on L'Ancresse Common, but Mr. Derrick has found it also at the Guet (Câtel Parish), on the coast towards Houmet, and on the cliffs at Petit Port.

Rev. R. Tourtel read a paper on the names of creeks, rocks, &c., round Herm; it proved unusually interesting and will be published in the *Transactions*.

Mr. W. A. Luff exhibited some nearly full-grown larvæ of the Jersey Tiger Moth, *Callimorpha Hera*. They had been reared from the egg by Mrs. Boley.

Informal Meeting held May 21st, 1902.

The Committee drew up the list of Excursions for the Summer :—

July 10th, Alderney if fine, but as an alternative, if rough, Grandes Rocques.

July 15th, St. Pierre-du-Bois.

July 30th, Fort Doyle and Fort Le Marchant.

August 12th, Les Thielles, Torteval.

August 30th, Sark.

September 9th, Richmond and L'Erée.

Monthly Meeting held October 15th, 1902, Mr. W. A. Luff in the chair.

The Secretary read the report on the Summer Excursions :—

Only the Geological and Entomological Sections were represented at the Alderney Excursion; the day was not a very propitious one. The results will be found under the Sectional headings.

The excursion to Grandes Rocques did not take place.

The excursion to St. Pierre-du-Bois was the most successful of the series; the report appears as a separate paper.

The excursion to Fort Doyle did not take place.

On August 12th, the members went to Torteval, but nothing of importance was noted.

In Sark, the Botanical Section was able, through the kindness of Mr. Hurst, a botanist, who has been staying at Dixcart Hotel, and who has visited Brechou (Isle des Marchands), and collected and named the plants of the Island for this Society, to make most important additions to the Flora of Sark, and so increase the number of the special plants of the bailiwick. Particulars are recorded in the annual report of the Botanical Section.

The Entomological Section might have had better success had the weather been brighter; many interesting species were captured, some being additions to the Sark list, especially among the *Diptera* and *Hymenoptera*. That beautiful metallic-hued beetle, *Cetonia aurata*, the rose chafer (not to be found in Guernsey), was noticed in some numbers on ragwort and blackberry blossom. Full-grown larvæ of that fine moth, *Saturnia carpini*, the Emperor, were taken in little Sark.

A heavy thunderstorm prevented the excursion to Richmond.

Mr. Derrick reported two additions to the plants of Herm, and the appearance of three rather rare plants in Guernsey.

A large and peculiar fish was caught off St. Martin's point, and exposed for sale in the market. Mr. Collenette, curator, purchased it for the Museum, and forwarded it to London for identification. It proved to be a very rare species, *Luvarus imperialis*, and appears to have no English name. It frequents deep waters only, and has been caught mostly in more southern latitudes. A cast of it has been made and will be exhibited in the Museum.

Monthly Meeting held November 19th, 1902, Mr. W. Sharp, President, in the chair.

Mr. Mollet exhibited photo of aloe in bloom (*Agave Americana*).

Mr. Luff exhibited an interesting variety of the large Heath Butterfly (*Epinephele tithonus*), found by Mr. F. Heaume, Forest; also Caddis Flies and two *Hemerobiidæ*, found in Alderney, all three new to that list.

Mr. J. L. Pitts showed a Genealogy of the Sarchet family, a member of which, Thomas Sarchet, went from Guernsey to Cambridge, Ohio, in 1806. There are now living in Guernsey County, 49 males, lineal descendants of this Thomas Sarchet.

Mr. H. Marquand read an account of two attempts—one in April and one in May, this year—to explore the abandoned silver-lead mine in the cliff, between Moulin Huet Bay and Petit Port, with the three singular caves which are situated there. A section of the caves, which are one above the other, was shown. An interesting discussion ensued on the way in which these caves were formed, the traces of raised beaches and the supposed masonry in the upper cave.

Annual Meeting

Held on Wednesday, December 17th, 1902, Mr. W. Sharp, President, in the chair.

Mr. L. Pitts exhibited two celts, which Miss Guille, of 36, Hauteville, has been good enough to present to the Museum of this institution. One is composed of rough grit stone, and is identified by Captain Lukis as a celt that was many years ago figured by his late father as No. XX. in his

catalogue. It is described by him as "In the possession of John Guille, Esq., of St. George, Câtel, and found by Mr. Hallouvris at St. Clair, Guernsey." The other is a beautiful specimen of polished Fibrolite. This also was figured by Mr. Lukis, but he did not add to his sketch any particulars as to where it was found. Captain Lukis says the stone of which it is made is not found nearer than the Pyrenees.

Mr. Luff then read a paper on the "Spiders of the Channel Islands," by Mr. Fred. O. Pickard-Cambridge, B.A., F.Z.S. It will appear in the *Transactions*.

Mr. Derrick then read a paper by Mr. E. D. Marquand, A.L.S., on "The additions to the Flora of Alderney." It will be published in this year's *Transactions*.

Mr. W. A. Luff read his paper on "Additions to the List of Alderney Insects," and

Mr. A. Collenette, F.C.S., F.R. Met. Soc., gave a few particulars as to the Rainfall and Sunshine. He will read the paper at the January meeting, and it will be included in this year's *Transactions*. Mr. Derrick then read the report of the Botanical Section, Mr. W. Luff that of the Entomological Section, and Mr. C. G. De La Mare gave some particulars of that of the Geological Section.

Mr. Derrick announced that the Council had received a paper by Mr. C. Hurst on "The Island of Brechou and its Flora," which they had accepted with much pleasure. It will be included in this year's proceedings.

The Secretary then read the

ANNUAL REPORT.

The Society has continued its useful work in a quiet way throughout another year.

The indoor meetings have been fairly attended, but the difficulty of selecting new local subjects of interest for consideration leads the Council to suggest that at future meetings, subjects connected with Science generally might be set down for consideration and thus new life be infused into the monthly meetings.

Excursions were organised for the summer months, but only one was very numerously attended. Walks in the country are manifestly one of the best means that could be adopted to raise and maintain an enthusiasm in the work this Society undertakes. These excursions ought therefore to be maintained, and if possible steps should be taken to get young people, senior pupils in our schools and colleges, to take part in them.

We are pleased to record that a commencement has been made of collecting and publishing historical and architectural information concerning the island churches, and hope that this branch of study will be continued in the coming year.

The Sectional Reports are exceptionally interesting. The Botanical Section is greatly indebted to Mr. C. Hurst, an English botanist of repute, for his researches in Sark, and more so that he has paid several visits to Brechou, cataloguing its plants, thus completing, as far as Botany is concerned, the exploration of all the inhabited islands of the Bailiwick. Mr. E. Marquand has taken another step in exploring the wonders of our shores by preparing the paper on the Seaweeds of Alderney.

During the year the following papers have been read :—

"Ancient names of the Bays, Creeks, Rocks, &c., on or near the coast of the Islands of the Bailiwick, with Notes, &c.," by Rev. R. H. Tourtel, B.D., Rector of Torteval.
"List of the Spiders of the Channel Islands."
"Additions to the Flora of Alderney."
"Additions to the Alderney Insects."
"Guernsey Sunshine and Rainfall for 1902," and
"Island of Brechou and its Flora."

The following publications have been presented to the Society :—

"Reminiscences of a Yorkshire Naturalist." presented by the family of the late William C. Williamson, LL.D., F.R.S.
"Report of the Smithsonian Institution for 1900."
"Bulletins Nos. 1, 2 and 4 of the Lloyd Library of Cincinnati, Ohio."
"Proceedings of the Natural Science Society of Philadelphia," Vol. 4, Part I. and Part III.
"New Guide to Shell and Starfish Galleries," also
"Hand List of Birds, Vol. I.," from the Authorities of the British Museum.
"Vol. I. of the *Field Naturalist*."

The Council and members give hearty thanks to the Committee of Management of the Guille-Allès Library for the continued use of the room where the Society's meetings are held.

The number of members now is 84.

The Treasurer's report shows a balance against the Society of £3 15s. ; last year it was over £6.

G. T. DERRICK, Hon. Sec.

Mr. W. Sharp, the retiring President, then read a most interesting address.

RETIRING PRESIDENT'S ADDRESS.

LADIES AND GENTLEMEN,—Twenty years have passed by since in a humble way, but with much enthusiasm, this Society was founded, and the present time seems a very suitable one in which to review its labours, to record its triumphs, and to brace ourselves for new efforts. It is a matter of much thankfulness that the majority of those earnest spirits who were present at its inception, and with whom, indeed, the idea of such a Society originated, are still among its most active members. And in looking back over the work done during these twenty years one is astounded at the richness of the field wherein they have laboured, and admire the foresight of those who saw the need of such a Society that the work might be systematically carried out and as systematically recorded. Little did the most sanguine dream in those early days that their research would meet with such abundant reward. The area to be worked was small, but in every department it has proved a happy hunting ground. Our peculiar insular position, yet so near the mainland, accounts for the existence of many interesting and curious phenomena with regard to the distribution of both animal and plant life. Many interesting problems offer themselves for investigation, and will be referred to later.

In reviewing the work accomplished during these twenty years we naturally give first place to Mr. Marquand's *magnum opus*, published last year, "The Flora of Guernsey and the lesser Channel Islands." Although assisted by many able and zealous workers, the giant's share of the labour fell upon the author, and he is to be congratulated on the production of a work in every way worthy of the subject, and destined to be the standard authority on the Botany of the Bailiwick for long years to come, and worthy to take its place beside the excellent "floras" of the adjoining French coast, and those of the Mother Country. Not only is the astonishing number of 2,653 species of plants recorded for the district, but much valuable and extremely interesting matter on local names and folklore is added. To the same indefatigable worker we are indebted for a list of the Mollusca of the same district; this includes 317 marine and 76 land and fresh water species.

Passing on to Entomology, to that veteran Mr. Luff belongs the honour of cataloguing 1,776 species of insects of various families for Guernsey, and 559 for Alderney. Truly a marvellous record, the recreation of a busy man.

What adds to the importance of this record is the fact of the discovery of both species and varieties new to science.

Geology also has received a due share of attention ; more especially the clays and other superficial deposits. True, the general geology of the islands has been worked by the Rev. Hill and Professor Bonney, but a mass of detail has been carefully got together and classified under the heads of superficial deposits, rocks, raised beaches, rubble head, &c., and will serve as data in the future for the solution of many interesting problems.

Most elaborate tables of details with regard to the rainfall and sunshine of Guernsey and other matters meteorological have been compiled by Mr. Collenette.

Folklore and archæology have also received attention, and old customs and sayings, superstitions and beliefs—fast passing into oblivion—have been recorded ere the memory of them had passed beyond recall.

The excursions made from time to time during the summer have not only been a most agreeable form of recreation, but have infused into many who had but little interest in the various branches of Natural Science, a desire to become acquainted with the wonderful variety of life around them, and aroused a spirit of inquiry which in the future must bear fruit.

While we are pleased to have such a large number of subscribers to the Society, we cannot expect all to be active workers, but I think it would do much to increase the number of those who not only subscribe, but themselves become workers, if the excursions were more frequent.

And then the results of the labours of our local naturalists have gone abroad in the *Transactions* which are issued year by year. And so we look back and are proud of the results achieved by this little band of enthusiasts in this little corner of His Majesty's dominions. Hill and valley, streamlet and pool, field and meadow, bog and sandhill, hedgebank, rock and old wall, ant-hill and even plant stems have been searched, and not in vain : each has yielded its own particular treasure.

But while chronicling this vast amount of successful research, in every branch, we must not imagine that the Society's work is at an end. We need not repine that there are no worlds to conquer. Much remains to be done, much that is as interesting and as important as that already accomplished. To speak of the inexhaustible field of operations offered by Marine Zoology, a branch practically untouched by the Society, is but to re-echo an oft-expressed plaint in Secretary's reports and Presidents' addresses in the past. Surely the only reason

why this most attractive subject has not found votaries among us is that we have not here men and women with the leisure necessary for its successful prosecution. Perhaps one of our ex-Presidents who has now retired from active service in one field will turn his attention to this subject.

One young Guernseyman, Mr. H. Fleure, B. Sc., has gained distinction for original research in this branch of Natural History, thereby gaining a Fellowship of his University, and I hope he may be induced to devote some of his holiday time among the treasures of our coasts. If some member who at once has the leisure and the liking for marine work will allow himself or herself to be nominated Secretary of a section for Marine Zoology, I think that will be the first and a most important step in the direction of getting this branch of Science investigated. The appointment of sectional secretaries in other branches gave a great impetus, and why not in this case? The museum in connection with this Institution contains a fairly complete collection of crustaceans, echinoderms, &c., which will be excellent for reference. And, while speaking of the museum, may I be allowed to say I think it should be *par excellence* a LOCAL one. It is manifestly impossible to make it worth anything as a general museum, and interesting as it may be to the casual visitor to see odds and ends from every corner of the earth, it can only be of true educational value as an exposition of the riches of our own district, a place where the enquiring student can find specimens by which to identify his latest "find."

Any great addition to the list of plants can hardly be expected, still there are many interesting facts connected with the *distribution* of the flora in these islands which might profitably be studied in connection with their geological and geographical feature, as indicated by Mr. Marquand in his paper on "The Flowering Plants of Guernsey" read before the Society in 1891.

In geology, the old question of the clays and their origin and mode of deposition, diametrically opposite views on which are held by two distinguished members of the Society, needs further investigation. Evidence of glacial action, especially the striation of rocks, should be searched for. The evidence of it is slight, I know, so far; but further search with the express object in view may enable us to pronounce definitely on the point. I read lately in a geographical journal that asbestos is found here in the Channel Islands. Now we know hornblende enters largely into the composition of our rocks, often to the exclusion of mica; but I was unaware that this

fibrous flexible variety is to be found here. Rev. Hill in his paper on "Mica Trap Dykes in the Channel Islands," in 1891, says, "among the many interesting lines of investigation there is the study of dykes and smaller igneous intrusions, especially in regard to their ages, relative and actual. The investigation may possibly lead to valuable scientific results. In England there have been many outflows of igneous matter down even to tertiary times. At present there is no evidence of such action in Guernsey or Jersey posterior to the Carboniferous age. But if any dyke could be discovered which should traverse or pierce one of these mica traps it must be itself of post-carboniferous age, and would afford an evidence of a later disturbance. And thus it becomes of much interest to discover, enumerate, and closely examine all these Mica Trap Dykes of the Channel Isles."

Some work has been done in this direction, without, it is true, finding evidence of such recent disturbance, but it seems to me this is a line of enquiry we must not forget in the future.

Ornithology again has received but scant attention from us as a Society; a carefully drawn-up list of our feathered friends—both resident and occasional visitors—should be compiled, together with notes on the time of their arrival and departure. Occasional facts have from time to time been recorded, but these want to appear in a collected form.

Again, it seems desirable that strictly local names (not merely the French translation of the English ones) of plants, birds, insects, &c., should be compiled. Mr. Marquand has done this in some cases for the flora, but that is all. To do this will, I apprehend, be a work of some difficulty, and will need to be undertaken by those conversant with the *patois* as well as French and English; but such a list would be of great interest and value, for there is but little doubt that the use of the *patois* will decrease as time goes on, and the difficulty of obtaining such information will be materially increased.

I see in the Report of His Majesty's Inspector who lately visited the Guernsey Schools that "Nature Study" is a thing unknown in the Island Schools, and that he recommends its introduction in the School curriculum.

In the hands of capable and enthusiastic teachers what may we not expect? Surely the rising generation will take more interest in the wonders of Nature around them, and a spirit of enquiry be aroused which never existed before here. May we not then with advantage repeat the experiment we made some years ago (with but scant success then) of offering prizes to school children for the best collection of natural objects.

And now, ladies and gentlemen, having all too briefly and imperfectly, I fear, sketched the excellent work done in the past, and the directions the work may be profitably carried on in the future, I beg to resign the honourable post you conferred upon me two years ago; to thank you for your unvarying kindness and courtesy, and to express the earnest hope that the brilliant achievements of the past may be eclipsed by those of the future.

Mr. Sharp then proposed Dr. Aikman as President of the Society, remarking on his eminent scientific attainments. Mr. Collenette seconded the nomination. Dr. Aikman, M.D., C.M., L.R.C.S., was then unanimously elected President. Mr. G. Derrick was re-elected Hon. Secretary and Mr. W. Luff, Treasurer.

The ballot resulted in the selection of the following Council :—

Mr. J. L. Pitts.	E. C. Ozanne, Esq.
Mr. C. G. De La Mare.	Mr. F. E. Holiday.
Mr. H. E. Marquand.	Mr. R. Mabbs.

The meeting terminated at 9.45.

REPORT OF THE BOTANICAL SECTION.

The Botanical Section can report very satisfactory results for this season; it is, however, greatly in need of reinforcements.

Mr. E. D. Marquand, A.L.S., vice-president of the Society, is steadily prosecuting his researches in Alderney.

In Guernsey some of our rarer plants have been noted. *Lychnis githago*, Corn-cockle, was abundant in a heavy crop of vetches in the Mount Durand district of St. Martin's. *Datura stramonium*, Thorn Apple, occurred in a cultivated field at the Naftiaux, St. Andrew's. I have now met with it in almost all the country parishes. *Linaria repens*, Striped Toadflax, made a pretty show at one of its old stations near Ozanne's Mill.

In the spring I found *Gymnogramma leptophylla* growing as strongly and as abundantly as ever in the hedge at St. Saviour's.

We are adding to the Guernsey list three plants this year, viz.: *Spiræa ulmaria*, L., Meadow Sweet. In 1886 I found it growing in a meadow beyond Les Tourelles, St. Peter's, but as it was near a farmhouse, it was thought it might have been planted there; but this year, on the occasion of the Society's

visit to St. Peter's, I found several plants in the meadow next the Rectory.

Juncus bufonius, L., var. *fasciculatus*, Bert. This variety was found by Mr. Cecil Hurst, growing on L'Ancresse Common near Fort Doyle.

Sclerochloa procumbens, Beau. Procumbent Meadow-grass. Professor Babington recorded it as occurring in a marsh at the Bouët, near St. Peter-Port, in 1838; it had not since been noticed till 1902, when Mr. Cecil Hurst found it growing sparingly near the rails close to the tramway station at the south end of the Vale Road.

In Herm, during a visit on September 27th, *Euphorbia peplis* was found growing plentifully enough both on the west sand beach and on the long shell beach on the east side of the island, but the plants were not very large.

Two new plants were observed: *Spiranthes autumnalis*, Ladies' Tresses, was growing on the south edge of the common, and

Lagurus ovatus, Hare's-tail Grass, also on the common, a little further to the north than *Spiranthes*. There was a nice little patch of this grass, which has hitherto been known in Guernsey only.

SARK.

Most valuable additions have been made to the Flora of Sark as a result of the researches of Mr. Cecil Hurst, a well-known botanist, who has for some months been staying at Dixcart Hotel. Mr. Hurst intimated to Mr. E. D. Marquand that he would be pleased to point out the new plants he had discovered to the members of this Society. The annual excursion to Sark took place on August 30th, the Entomological and Botanical sections being the only ones represented. Proceeding from Les Laches towards La Forge, I found *Malva moschata*, L., Musk-mallow, which is now therefore placed on our Sark list. Professor Babington marked this plant as common in Sark in 1838. Arrived at Dixcart, Mr. Hurst kindly made a tour of the island with me, and showed me the following new plants:—

Gnaphalium undulatum.
Silene dichotoma.
Arthrolobium ebracteatum, D.C., Sand Joint-vetch.
Mentha pulegium, L., Penny Royal.
Rubia peregrina, L., Wild Madder.
Filago gallica, L., Narrow-leaved Filago.
Inula crithmoides, L., Golden Samphire.

Gastridium lendigerum, Gand., Awned Nit-grass.
Cuscuta trifolii, Bab., Clover Dodder, and
Osmunda regalis, L., Royal Fern.

These will now be added to our Sark list.

The *Gnaphalium* is a native of the Cape, but is well established in Jersey. It has an affinity to *G. luteo-album*, but is much larger. One plant of it, a very conspicuous object, was growing on the cliff close to the path in front of La Jaspellerie, and could not have escaped notice had it been growing there in previous seasons; probably this plant grew from a seed brought over from Jersey by a bird. This species is not yet included in the British list. The *Silene*, also new to the British list, was growing near the gate on the south side of La Jaspellerie. In the same field were several large patches of *Arthrolobium*, made conspicuous by the green foliage and abundant yellow flowers. Further south, in a field near Clos Buret, where *Echium vulgare* abounds, were several considerable patches of *Mentha pulegium*. These two species must have been established in these stations for years, and yet escaped observation. Both are well known in Guernsey.

On a projecting mass of cliff, overlooking the Creux Harbour, were several plants of *Rubia*. They were stunted and overgrown by furze, fern, &c., but growing on a part of the cliff which visitors never enter, it has not previously been observed though long established. It does not occur elsewhere in the bailiwick, except in Alderney.

Filago gallica was abundant in large masses in two fields towards Vallette, and in the same neighbourhood Mr. Hurst pointed out *Gastridium lendigerum*. Near Le Port, parasitic on Ox-eye Daisy, was *Cuscuta trifolii*, identified by Messrs. Marshall and Linton, not yet noted in Guernsey, though it occurs in Alderney. Finally, on an inaccessible part of the cliff at Vermandée, in Little Sark, were some plants of *Osmunda*. There is no fear of anyone disturbing them, and it is to be hoped that from this last refuge, the species may have a chance of once more spreading through the island.

I have found two new stations for *Dianthus armeria*, one a lane near the cemetery, the other cliffs south of Dixcart.

Mr. Hurst adds the following also to the Sark list, and says :—

Potentilla tormentilla, var. procumbens, *Sibth.* Occurs not unfrequently as a native on hedge-banks in Sark, *e.g.*, near Vaurogne, near Dixcart Hotel, &c.

Knautia arvensis, *Coult.* (Field Scabious). A casual; one plant in a cornfield between La Vallette and Creux Harbour.

Salix Smithiana, *Willd.* (Silky-leaved Osier). This willow occurs low down on the cliffs at Grêve de la Ville, and is a hybrid between *S. caprea* and *S. cinerea*.

Luzula multiflora, *Jacq.* (Many headed Wood-rush). Little Sark, near Vermandée ; a native.

Carex arenaria, *L.* (Sand Sedge). A native. Very sparingly near Port Gorey. Plentifully, but flowering very sparingly at Les Petits Creux, on western side of Little Sark. The occurrence of this sand-loving species on the rocky Sark coast is curious. It is perhaps a relic of a time when Sark possessed a sandy shore.

Carex punctata, *Gaud.* (Dotted-fruited Sedge). Native. In fair plenty along a rocky gully close to the bay Rouge Caneau in Little Sark. The gulley descends exactly opposite a small pool of fresh water on the coast. Very sparingly between Vermandée Bay and the Coupée. Very sparingly on the cliff in the centre of Vermandée Bay.

Carex flava, *L.* (Yellow Sedge). Growing in the gully near Rouge Caneau mentioned above, I found a curious form of *Flava*, about which the Rev. E S. Marshall writes me as follows : — "It must come under aggregate *C. Œderi*, Reitz, and is perhaps nearest to var. *Œdocarpa*, And. (*C. flava*, var. *minor*, Towns), but I have nothing quite like it ; the pistillate glumes are green (scarcely showing a trace of the usual reddish-brown) and the fruit is extraordinarily patent. So I can only say : *C. Œderi*, Reitz, var.

Aira cœspitosa, *L.*, var. *pallida*, Kock (teste E. F. Linton). (Tufted Hair-grass). An alien. Very sparingly in the grounds near the Seigneurie. Probably introduced with the ornamental shrubs planted there. Not recorded for Guernsey, which is curious, as it is common and native in Normandy.

Barbarea vulgaris, *R. Br.* (Yellow Rocket). Colonist. In a cultivated field near the Seigneurie, also near Valette. Mr. Derrick had noted this species previously in Sark, but had not recorded it.

Two further additions to the Sark group, viz., *Vicia sepium*, L., and *Ophioglossum vulgatum*, var. *ambiguum*, are recorded in the Flora of Brechou.

I may also mention *Bromus madritensis*, L., var. *rigidus*, Roth., is well scattered round the Sark coast, occurring plentifully in some places. It also grows inland and at the Coupée.

Vicia tetrasperma, rare in Guernsey, is rather frequent in Sark hedge-banks, and seems quite a characteristic plant of the island.

Mr. Hurst has made excursions to Brechou, or Isle des Marchands, and catalogued the plants he found there ; it forms quite an interesting list of 205 species (see page 163).

G. Derrick, Sec. Bot. Sect.

REPORT OF THE GEOLOGICAL SECTION.

SUPERFICIAL DEPOSITS.

Vale Road.

The excavations carried on in this road shewed head overlaid by yellow earth with sandy patches. At the foot of

La Fontaine hill, a large pocket occurred filled with water-logged sand, possibly indicating a creek connected with the Marais depression.

Roland Road, Church Lane, and Church Road, St. Sampson's.

In these localities head occurred consisting of angular pieces of diorite in a plastic clayey matrix, overlaid in many places by yellow earth with sandy streaks and patches, but nowhere exceeding six feet in depth.

Vrangue Brickfield.

In the process of working the upper pit, a new section has been exposed, which, although not differing in general character from those previously reported on, yet from its freshness has permitted the verification of a fact previously doubtful, viz.: the presence of pebbles in the undisturbed deposit. Over the decomposed rock (which shews in a very distinct manner the curves due to displacement) occurs a layer of head similar to that in the lower pit and of about 18 inches in thickness. Above this head is found a layer of sand, the base of which is cemented by iron oxide deposited by the percolating water, and it is at or near the base of this sand that the pebbles referred to have been found. The largest noticed were about three inches in diameter, all being well polished and rounded. Some were syenite, some quartz, and some flint. It would, therefore, seem that this sand is connected with the deposit at the bottom of Guelles Road, mentioned in last year's report, and is probably of marine origin. Both the above deposits correspond as regards elevation, with the raised beach near Noirmont, which as was pointed out in last year's report, also rests upon head. There can be no question as to the undisturbed state of the layer of sand which is overlaid by 10 or 12 feet of clay with occasional streaks of sand.

Route Isabelle.

In the lower part of this road deposits of yellow earth overlaid by peaty clay were found at a considerable depth.

ROCKS.

Fountain Street.

The basement of the house, No. 28, has been excavated. The rock was diorite intersected by felsitic veins.

Alderney.

An excursion to Alderney was made in July. The coast West of Essex Castle was visited. The rock is rather coarse sandstone dipping 30° East of South at an angle of 30°. The most noticeable feature was a mica trap dyke in La Chue sandstone quarry on the South coast, which dyke is about 3 feet wide and nearly vertical, its direction being 22° East of South. Although it belongs to the mica trap series, mica is not so abundant as in the generality of these dykes. The rock is chiefly felspathic, and has a vesicular structure which appears to be due to the inclusion of gases in the process of formation, the cavities being rounded and not angular as would result from the removal of crystals by solution.

C. G. De La Mare, Sec., Geol. Sect.

REPORT OF THE ENTOMOLOGICAL SECTION.

Although the past season has not been a very favourable one for the collection of insects, we have been able to add sixteen species to the Guernsey list.

I have no record of the occurrence of *Colias hyale* or *edusa*, and *Sphinx convolvuli* which was so abundant last year has scarcely put in an appearance; I know of only two captures.

Melitœa cinxia (the Glanville Fritillary) was not so abundant as usual, and was on the wing unusually late, I saw a number of them at Saints' Bay on July 13th.

The Rev. F. E. Lowe has again bred specimens of *Dianthœcia capsophila*, these emerged on May 25th. He has also been successful in rearing that local moth *Heliophis hispidus*. Two *pupæ* were found in the spring of 1901, and the perfect insects emerged and paired in the breeding-cage. Eggs were laid on September 25th, and hatched on October 5th. The *larvæ* fed up on grasses and became *pupæ* at Christmas. The perfect insects commenced emerging on August 2nd, and fourteen emerged between that time and October 5th. The remaining *pupæ* are alive and appear to be lying over until the spring.

A fine specimen of that rare and handsome beetle *Calosoma sycophanta* was captured by Miss M. Le Messurier, of Hauteville, on July 13th. It flew into her bedroom window in the evening, probably attracted by light.

Canon Fowler in his "*British Coleoptera*" says :—"This beautiful species is not really a native, but only an occasional

visitant; it has been found in Deal, Dover, Folkestone, Herne Bay and Gravesend; it has also occurred in the Isle of Wight and at Plymouth; one example was recorded from the Irish Coast in 1815, but this is very doubtful."

A specimen of the extremely rare *Melœ autumnalis* was brought to me during August; it was taken at St. Martin's.

Several specimens of *Hoplia philanthus* were taken near Grande Rocque on June 22nd. We had previously only one record of its capture by Mr. Fourneau many years ago.

A most interesting discovery is that of *Clunio marinus* a small fly which occurs on the sea-shore at about half-tide, both in Guernsey and Jersey. The male skims over the surface of the water in rock pools. The female has only the merest rudiments of wings, and both sexes have their mouths almost obsolete. The *larvæ* feed on the green seaweeds (*Cladophora*) growing in the pools.

This species was first discovered on the Coast of Kerry in Ireland, by Mr. Halliday, in 1855, who described the male in the *Natural History Review* of that year. It was not found again until April, 1872, when Mr. Dale met with it on the shore near Hastings. The only other mention of it is in the *Entomologists' Monthly Magazine*, for 1894, when both male and female and the curious *larvæ* are described and figured by Mr. Geo. R. Carpenter, B.S.C., from specimens taken near Dublin.

During the Society's excursion to Sark on August 30th, I captured a specimen of *Salius obtusiventris*, a bee which had not been previously recorded for the Channel Islands.

Several species of *Diptera* and *Hymenoptera* which form galls on various plants are additions to the list.

An important paper written by Mr. Edward Saunders, F.L.S., on the *Hymenoptera-Aculeata* of Jersey, Guernsey, Alderney and St. Briac (Brittany), was published in the *Entomologists' Monthly Magazine*, for June, 1892.

During a stay in Jersey of three weeks in 1901, from the 5th to 24th July, Mr. Saunders captured no less than 129 species which, with the addition of 17 previously recorded, makes a total 146 species for that island. Fifteen of these do not so far as we know occur in Britain, neither have they been recorded for Guernsey and Alderney. From the above data and the lists published for Guernsey and Alderney in our *Transactions*, Mr. Saunders has drawn up a Comparative Table of species now known to occur in the three larger Channel Islands.

Mr. Saunders says:—"It is an interesting fact, and one that shows how much more closely the *Fauna* of Jersey approximates that of the Continent than do those of the other islands, that in Guernsey and Alderney only one species *Andrena flessœ* is recorded which is not found in Britain, whereas in Jersey, 15 such species have occurred, and 28 were the result of a fortnight's collecting at St. Briac."

On July 31st of the present year, I visited Jersey, and was successful in capturing several of the non-British *Aculeata*, mentioned by Mr. Saunders, and which do not occur in Guernsey.

Amongst these were *Scolia 4-Punctata*, *Bembex rostata*, *Sphex flavipennis* and *Cœlioxys brevis*. I also took the very rare *Chrysid*, *Hedychrum rutilans*, which was described for the first time as British in the *Entomologists' Monthly Magazine* for last year, and several rare *Dipterons*, viz.: *Oxycera pulchella*, *Miltogramma punctata*, *Anthrax velutina*, *Merodon mœnium*, Mg., and *Merodon albifrons*, Mg. The three last named are not found in Britain. *M. punctata* is supposed to be parasitic on bees, and I noticed it entering the burrows of *Megachile argentata*.

I have received specimens of *Arctia villica* (the cream spot tiger moth), *Cetonia aurata* (the rose chaffer) and one very small specimen of *Geotrupes pyrenæus*, from the island of Brechou off the Sark Coast. They were captured by Mr. Hurst and are interesting as being the first insects recorded for that island.

An additional list of Alderney insects taken by Mr. E. D. Marquand, A.L.S., numbering 47 species, has been read before the Society, and will be published in the *Transactions*.

ADDITIONS TO THE LIST OF THE COLEOPTERA OF GUERNSEY.

Calosoma sycophanta, *L.* A fine specimen of this rare species was captured by Miss M. Le Messurier, in her house in Hauteville, on July 13th.

Ptinus sexpunctatus, *Panz* One specimen taken in my house in Brock Road on July 1st.

Meloe autumnalis, *Ol.* A specimen of this extremely rare species was brought to me from St. Martin's.

ADDITIONS TO THE LIST OF THE HYMENOPTERA OF GUERNSEY.

HYMENOPTERA-ACULEATA.

Colletes succincta, *Ltr.* Taken by Mr. F. V. Theobald, B.A., F.E.S., at Cobo.

C. fodiens, *Kirb.* Common on *Senecio* at Cobo, F. V. Theobald.

Colletes Daviesana, *Sm.* Captured by Mr. F. V. Theobald at Cobo.

Psithyrus campestris, *Panz.* One specimen taken at the Gouffre by Mr. F. V. Theobald.

CYNIPIDÆ.

Rhodites spinosissimæ, *Giraud.* Galls are formed by the larvæ of this species on the wild rose (*Rosa spinosissima*, L.), growing on L'Ancresse Common.

Diastrophus rubi, *Htg.* The larvæ form galls on the stems of the common bramble.

TENTHREDINÆ.

Nematus bellus, *Lad.* This species forms hairy pea-shaped galls, which are firmly attached to the undersides of the leaves of sallow.

ADDITIONS TO THE LIST OF THE DIPTERA OF GUERNSEY.

Clunio marinus, *Halliday.* Common, flying over rock pools, July 13th, 1902, Saints Bay. Rock pools near Elizabeth Castle, Jersey, August 3rd.

Cecidomyia marginem-torquens, *Wtz.* The larvæ feed on the leaves of the common osier (*Salix viminalis*, L.), rolling up the margin of the leaf towards the mid-rib.

C. pteridis, *Müll* Forms a gall on the common bracken fern (*Pteris aquilina*, Lin.), by causing the secondary pinnæ to thicken slightly and form a torpedo or cigar shaped roll.

C. cratægi, *Wtz.* Form galls on the common hawthorn, consisting of a tuft of leaves situated at the summit of an upright shoot growing out of the top of the hedge.

C. urticæ, *Perris.* This species causes irregular shaped galls on almost every part of the common nettle (*Urtica dioica.*)

C. salicis, *Schrk.* The larvæ form galls on the twigs of *Salix cinerea* by feeding on the pith, and causing the woody cells which surround it to swell.

W. A. LUFF, Sec. Ent. Sect.

AN EXCURSION TO ST. PIERRE-DU-BOIS.

BY MR. G. T. DERRICK.

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THE excursion to St. Pierre-du-Bois on July 15th was most enjoyable. It marks an era in the history of the Society, as it gave the members their first opportunity of studying the history and architecture of one of our island churches.

Twenty-seven members and friends formed the party and they had a very pleasant drive.

Rev. H. W. Brock, the Rector, had been good enough to invite the Society to visit and inspect the church, and he had induced his friend, Rev. G. E. Lee, Rector of St. Peter-Port, to give some particulars of the history and architecture of the building; on this subject Mr. Lee is the best authority in the island.

Mr. Lee met the party on their arrival, and on behalf of Mr. Brock cordially invited them to partake of some refreshment at the Rectory, whither they accordingly repaired. Afterwards they all proceeded to the church, which is beautifully situated near the head of a pretty valley, commanding a delightful view over its whole length to the sea at Lihou.

There Mr. Lee gave particulars of the parish and church, and then drew attention to its construction. The following *résumé* of his remarks has been drawn up by the Secretary, Mr. G. T. Derrick.

It appears always necessary when speaking of Guernsey churches, to reiterate the statement that the book called "Les Dédicaces des Eglises," does not give an account of the real dedication of the churches; the statements in it are totally unsupported by documentary or even traditional evidence, and instead of being written by a contemporaneous author, it was not produced until the 17th century. It is only necessary to draw attention to a few points to make this evident:—

1st.—It contains a reference to *Havre de Grace*, which name was not given to the great seaport at the mouth of the Seine until 1517.

2nd.—The book was written by a Protestant, who had no idea of Roman Catholic services generally; he did not know that there is a special form of service proper for ceremonies like these. He describes the Bishop as making a long extempore prayer.

3rd.—He gives the Bishop's name as Basset; there never was a prelate of Coutance of that name, and the one at the date given was Algar.

4th.—There never was such a person as Sieur de Cornet. Names of old Guernsey families and estates are cleverly introduced for the purpose of pleasing their descendants; but at that period scarcely an individual had more than one name, family names were not assumed till later.

So all dates mentioned in that book must be put aside; they are quite apocryphal.

As a fact, many of the parishes were defined before the Conquest, St. Pierre-du-Bois among them. The earliest document giving them by name is of about the year 1048; it is a charter by Robert, Duke of Normandy, confirming a gift made by his father, William, of half of the island to the great Benedictine monastery of Mont St. Michel in France. The church is named again in a deed by Pope Adrian, Nicholas Brakespear (the only Englishman who ever occupied the papal chair) in 1155, confirming the former deed; it and a quarter of the island are there declared to belong to the Fief le Comte. The four churches named are: St. Michel (Vale), St. Sauveur, Ste. Marie (Câtel) and St. Pierre-du-Bois. The chapels of St. Mary, of Lihou, St. Magloire (perhaps of the Vale, perhaps of Sark) and St. George are also mentioned.*

The value of the living is given in 1251 as 60 livres tournois; that is of two-thirds of the tithes and other dues,

*NOTE BY G. T. D.—Tupper in his history of Guernsey also proves the existence of this church in 1028, quoting the list of Fiefs existing at the accession of Robert I. (Duke of Normandy in 1028), at which time Guernsey was divided into two great fiefs: the fief of Néel, vicomte de St. Sauveur (Cotentin), comprised the six parishes of St. Samson, St. Peter-Port, St. Andrew, St. Martin, the Forest and Torteval, including the Château d'Orgueil The remaining four parishes: the Vale, Câtel, St. Sauveur and St. Peter-in-the-Wood, formed the fief of Ansquetil, vicomte de Bessin (Bayeux), part of which is known as "Fief du Comte!"

which were paid to the Abbot of St. Michel. The rector's income at that time is given at 40 livres tournois; St. Pierre le Port was worth 80, Sark 40, the Câtel 40. But besides this, 400 livres tournois went to the Abbot, for, the parent church, to which St. Michel in the Vale and these others were attached, took all the great tithes, *i.e.*, those of corn, fish, &c.; the rector only had what was presented to the altar.

The Abbey, therefore, from the numerous properties it possessed in various parts of Normandy, Brittany and the islands, was very rich, and the monks were able to expend vast amounts in extending and beautifying Mont St. Michel, which is one of the most marvellous and interesting of ecclesiastical structures; they could also afford to build good churches in the parishes dependent on the original foundation.

Supposing that at this early date any church had been erected in this district, there are no indications of it; it has completely disappeared. It would probably have been constructed of wood, and therefore likely to be destroyed in any of those forays of piratical bands from which the island suffered so frequently at this period.

Later, we find St. Pierre mentioned in connection with an enquiry into the revenues of the Crown. In this document occurs the "Fief of Notre Dame," which is probably named from the church on Lihou Island, which was a dependency of St. Pierre-du-Bois, not of Torteval. And here Mr. Lee mentioned that the church on Lihou contained apparently the best carvings and mouldings to be found in Guernsey; some remnants of them can still be seen inside the house enclosure there.

In 1358 there was another enquiry, and among prominent men in the parish at that date are named Renouf, De Vic, Adam, &c. At that time two-thirds of the tithes, 50 livres tournois (£5 sterling), went to the Abbot.

In early deeds at the Greffe, many confraternities are mentioned in connection with the ecclesiastical establishments.

In 1031 this Robert the Magnificent collected ships and forces to invade England, but was driven by a gale to the neighbourhood of Guernsey, where the fishermen assisted in bringing his ships into a safe anchorage, almost certainly St. Sampson's harbour. Robert then led his expedition against Alain, Duke of Brittany, and compelled him to sue for peace, which was signed at the Abbey of Mont St. Michel. Both Dukes evinced great liberality to the Abbey; Robert gave it the half of Guernsey which had belonged to the Vicomte de Bessin (Bayeux), but Duke William II. restored it to the Vicomte de Bessin, although the Abbey retained its four churches, viz., Vale, Câtel, St. Sauveur, and St. Pierre-du-Bois, with their tithes.

These were associations of individuals or families who profited by masses, &c., left by former inhabitants. For instance, between 1499 and 1539, are set out the rules of the confraternity, "Du Nom de Jesu," its chaplain and its annual value; also of St. Nicholas, the special protector of sailors; of Ste. Catherine and of the Sieur de Grace, also of Tous Saints.

The following list of the rectors of the parish has been kindly supplied me by Rev. H. W. Brock; it is taken from that compiled by Rev. G. E. Lee. It is especially interesting to note that this year (April 19th, 1903) completes a century during which the rectors have been members of the Brock family: the present rector, his father and grandfather.

RECTORS OF ST. PIERRE-DU-BOIS.

Gallican	Dom Johan Revel (who sold the Rectory).		
	14 —Nicholas Mauger	décédé	1497
	1497—Louis Le Gallois	,,	1504
	1504—Pierre Lohier	,,	1515
	1515—Thomas Costil.		
	1525—Andrew Powes.		
	1559—Jacques Amy, Doyen		1547
Anglican	1565—John After, ,,		1563
	1576—Mathurin Lhommeau dit du Gravier, démissionaire		1585
Presbytérien	1585—Pierre de Rey dit Bouillon	déposé	1593
	1596—Daniel Dolbel.		
	1607—Jean Perchard	décédé	1652
	1652—Daniel Perchard	résignant	1662
Anglican	1663—Pierre Bonamy	décédé	1691
	1691—Jean Bonamy, Doyen		1716
	1739—Pierre Garcelon	décédé	1772
	1772—Isaac Vallat	,,	1785
	17 —Thomas Reserson	,,	1789
	1789—François Ant. Emeric de St. Dalmas	,,	1803
	1803—Thomas Brock	,,	1850
	1881—Carey Brock, Doyen 1869	,,	1892
	1892—Henry Walter Brock.		

With regard to the church itself, the student must remember that the interior was intended to be quite clear, with no pews or fixed seats. There were probably three altars: the high altar and one in each side aisle. There may have been several small ones, against the pillars for example. This would be the position of the luminaries or lamps referred to in connection with the confraternities.

In 1441 power was given to Dom John Revel and M. De Lisle to sell the Rectory, which stood a long way off from the church, to buy in exchange a piece of land adjoining the church, and on it erect a new Rectory, which undoubtedly occupied the site of the present building, but it is quite uncertain on which De Lisle property the old Rectory stood.

The first thing that a visitor notices on entering the church is, that the floor slopes upward from West to East, and the capitals of the columns are not parallel to the present floor, but this is not unusual in Brittany and in Devonshire; the question remains "Did the Architect intend it to slope?"

(On making a more leisurely examination to try and clear up this point, I (G. T. D.) find (February, 1903) that the capitals of all the columns in the North arcade are on the same level one with the other, so are also those in the South arcade, and that they are horizontal; but the pillars decrease in height in regular succession from west to east. The first, the one which is built into and supports the east wall of the tower on the south side, measures 10 ft. from the moulding at the capital to the moulding at the base; the next measures 9 ft. 3 in., the third 8 ft. 6 in., fourth 7 ft. 9 in., fifth 7 ft., the sixth 6 ft. 3 in. So it is evident that the floor always sloped as at present, the decrease in height measuring the slope.

But on taking these measurements I made a most unexpected discovery, viz., that the pillars on the south side are all 6 inches longer from moulding to moulding than the corresponding one on the north. The capitals are on a higher level on one side than the other; it makes one imagine that the original flooring also sloped from north to south. The sills of the windows are at different levels.)

The building was most probably erected under guidance from monks connected with the parent church in the Bay of Mont St. Michel. Anyone acquainted with the neighbouring French coast notices immediately that Channel Island churches favour the Breton style of architecture. Mr. Lee thinks that most likely the stones for the windows, especially the tracery, were prepared in the neighbourhood of Morlaix; some experienced mineralogist might decide if the stones employed come from that neighbourhood or from Chausey, which is usually credited as their place of origin.

The church consists of a nave with two aisles and a chancel. Mr. Lee is of opinion that the whole was erected at one time, according to one design, though some archæologists (as may be seen from Mr. E. T. Nicolle's observations in the last paragraph) maintain that the Tower is more ancient than the body of the church. He points out the similarity of all the buttresses; they are alike in form and covering. Notice how peculiarly those in the Tower and in the church are set across the corner of the masonry they support; again, the top windows in the Tower are a reproduction of one in the church

itself, having not only the same plan but the same splayed curve. The masonry connecting the Tower and church, however, has from the outside a peculiar appearance, and the small window on the south-west wall of the church seems out of place and so lend countenance to a different date for the church and Tower.

The mouldings at the top of the octagonal pillars are reduced to the very smallest dimensions, showing a decadence from the original style. In the Town Church they are much bolder, showing an earlier date of erection. The flattened shape of the arches forming the arcades on each side of the nave also points to a late period of the Flamboyant style. Notice the arches and pillars are not Norman in any sense; the whole is evidently the work of the 15th century.

The Tower contains three bells, as when Mr. Lukis wrote. The tenor bell weighs 15 cwt., it is 44½ inches in diameter. There is only one larger than this in the island, viz., one in the Town Church.

Rev. H. W. Brock kindly supplies me with the inscriptions on the bells :—

COPIE DE L'INSCRIPTION LATINE QUI EST AUTOUR DE LA GROSSE CLOCHE DE L'ÉGLISE DE ST. PIERRE-DU-BOIS.

"*Ut inserviam Parochiæ Sancti Petri du Bois fusa fui anno Domini* 1681. "*Regnique Caroli II.* 33° *quo tempore Dominus illustrissimus Christopher Hatton erat hujus insulæ Gubernator Patronusque Ecclesiarum. Rever. Doct. J. de Saumarez erat Decanus. P. Bonamy vice-Decanus, hujusque parochiæ rector. T. De l'Isle Capitaneus, erantque Œconomi J. de Garis & N. Le Messurier.*"

SUR LA PETITE CLOCHE EN CARACTÈRE GOTHIQUE:

"*Melior vere non est Campana quam me.*"

SUR LA 2ème CLOCHE, EN MÊME CARACTÈRE:

"*Melior vere non est Campana quam ea.*"

There is a necessity of explaining the two small windows in the south wall, they differ so completely from the others in the building. A suggestion is offered that an insufficient number of windows was prepared by the workmen in Brittany, or that some were destroyed in transit; so when the actual builders in Guernsey discovered the deficiency, they prepared these two on the spot, and they were not skilful enough to follow the design or imitate the tracery in the other windows. In these again the arch is flattened and thus rendered incapable of supporting any very heavy superstructure, so it is perhaps a fortunate thing that the original roof of vaulted masonry has been removed. The modern one, at first tiled but now slated, is well constructed, but is out of keeping with the

arches, pillars, and interior generally. The ornamental tracery is missing also from two windows on the north side, but the outline of these is the same as the perfect ones in size and shape.

Notice that the two large windows in the east front have been reconstructed recently. Mr. Lee credits the late Sir Edgar MacCulloch with drawing the designs for these, from which the masons worked; but once more the artizans could not enter into the spirit of the design—the curves are flattened, do not naturally combine one with the other, and the tracery in them is inferior to that of the original ones in the side walls. There are no signs of a screen ever having been erected. The interior was at one time disfigured by great galleries, but these were removed when the new roof was erected.

Notice the two entrances, both on the north side, one through the porch, the other through the Tower.

Mr. Lee has a sketch of the north side of the church published early in the century, in which there is no circular window over the women's entrance; but in a wood-cut in a guide published shortly after, the window appears. Was this window inserted at the time of the extensive alterations (early part of the 19th century)? Mr. Lee leaves this point undecided; he thinks it might have been found necessary to insert it at some time to give light to one of the galleries with which the interior was then encumbered. Some marks in the masonry, *e.g.*, the pebbles inserted in the cement may bear out the idea that it is a modern addition, but these marks may have been made at any of the numerous re-pointings, and the pebbles occur in other parts of the outer walls.

The said rose window, however, looks so well designed and skilfully executed as to be worthy of the original workmen.

The square Tower is elegant in design and beautifully built: it is about 114 feet in height; there is a break in the masonry, stones of a different size being introduced at a height of about 20 feet. The summit commands a splendid view, bounded by the sea on all sides except the east.

Curious old metal mugs are still used for collecting the gifts of the congregation.

In the churchyard, north side, close to the church, is the tomb, dated 1625, of the Rev. James Perchard, a former rector. It is, perhaps, the oldest outdoor monument in the island.

Mr. Edmund T. Nicolle, Deputy of St. Helier, in his account of the visit of the Société Jersiaise to Guernsey in

1900, says:—"The present church of St. Pierre-du-Bois possesses few architectural features older than the 15th century; its reconstruction may have been coeval with the south side of St. Peter-Port. Excellent original flamboyant tracery is seen in some of the windows. The Tower is also at the west end, and it is the most elegant of the church towers in the island. It was evidently built *before the gable*, as the latter rests upon it, and probably before the arcade supporting the roofs. A curious feature in the church is that it has two entrances, a porch being found on the north side of the Tower, whilst another door close by gives access to the nave. It was formerly the custom for men to enter by one door and women by the other."

ANCIENT NAMES OF THE BAYS, CREEKS, ROCKS, &c.,

ON AND NEAR THE COAST OF THE ISLANDS OF THE BAILIWICK, WITH NOTES, &c.,

BY THE REV. R. H. TOURTEL, B.D., F.S.A.

(Continued from page 341, vol. III.)

ABBREVIATIONS.

Ar.....Arabic.	Gael.....Gaelic.	P. .....Point of land.
B. .....Bay.	Heb. .....Hebrew.	Pl. .....Plural.
Br. .....Breton.	I. .....Island or islet.	Port. .....Portuguese.
C. .....Creek.	Ic. .....Icelandic.	Pr. .....Pronounced.
Ch. .....Chaldee.	Ir, ...Irish.	Prov. ....Proverb.
Cl. .....Cliff.	It. .....Italian.	Provç. ....Provençal.
Com. .....Compare.	Kel. .....Keltic.	R. .....Rock.
Dan. .....Danish.	O. Kel. ....Old Keltic.	San. .....Sanskrit.
Der. .....Derived.	Lat. .....Latin.	Sam. .....Samaritan.
Dim. .....Diminutive.	L. Lat. ....Low Latin.	Sp. .....Spanish.
Eng. .....English.	Lit. .....Literally.	Sw. .....Swedish.
Fig. .....Figuratively.	Nor. .....Norwegian.	Syr... ....Syriac.
Fr. .....French.	N. Fr. ....Norm-French.	Trans. ....Translation.
Ger. .....German.	O. Fr. ...Old French.	V. .....Valley.
Gr. .....Greek.	Obs. .....Obsolete.	W. .....Welsh.

HERM.

It is said that Armia of the Antonine MSS. is probably Herm. O. Kel., *arm*, place of refuge ; *arm*, *erm*, length or point of land stretching out.

1,271.—**La Platte Boue.**—R. The *Waverley* and *Havre* (L. and S. W. steamers) were wrecked on this rock.

1,272.—**Plaquère.**—R. Possibly "flat rock." The latter part of the word *ère*, signifies "rock."

1,273 —**Pensionnaire.**—R.

1,274 —**Tautenay.**—R. Meaning probably "it is the islet." The latter part of the word, *ey* or *ay* = island. See note on Guernsey and Alderney. Com. Gr., *tauta*, this.

1,275.—**Bouffresse.**—R. See 284.

1,276.—**La petite Anfroque.**—R. See 1,282.

1,277.—**Selle d'Anfroque.**—R. See 1,282, 1,323.

1,278.—**Demie du Nord.**—R.

1,279.—**Bonne Grune.**—R. See 1,283.

1,280.—**Demie du Sud.**—R.

1,281.—**Boue du Pas.**—R.

1,282.—**La Grande Anfroque.**—R. "Broken, winding rock." Lat., *anfractus*, der. from *ambi frango*; San, *abhi*; Gr., *amphi*; O, high Ger., *umpi*, *umbi*; Ger., *um*, around; San., *bhang*, *prah*, break; Gr., *Frag* in *regnumi*; Heb., *pharag*, to break: Ch., *pharag*; Syr., *pharak*; Ger., *brechen*; Eng., break, wreck, to break; Ar., *farag*, to divide, separate; com. Fr., *anfractuosite*; It., *anfrattuoso*; Sp., *anfractuoso*. See Prov. 1,257.

1,283.—**La Grune Herbière.**—R. Br., *grouan*, *gro*, sand; W., *grŏyn*, pebbles; W., *grô*, *graéan*, sand; com. Ir., *grathal*, sand; Ic., *grun*; Dan., *grund*; Eng., aground; N. Fr. of Le Cotentin, *groué*, gravel. Grune and Grève seem to have the same derivation. See 105, 959. Herbière = possibly bitter, *i.e.*, "dangerous rock," or possibly too "green rock." Ger., *herbig*, acidity, sourness, harshness; Br., *herv*, *c'huerv*, bitter; W., *chwerw*; Br., *herberc'h*, shelter. See 138, 281. N. Fr., *herbier*, pond where the seaweed called *plise* is to be found. In Guernsey *plise* is a name given to *Laminaria saccharina* and *Zostera marina*.

1,284.—**Grungo.**—R. Br., *gringo*, "that which makes a noise"; *cringner*, to waste away, consume; com. Br., *scrigea*, to cry from fear; W., *ysgri*, shriek, scream.

1,285.—**Guépés.**—R. Possibly "ford." *Gué* or *guet*, passage; *pes*, feet, also piece.

1,286.—**Cul de l'Autel.**—R. An appellation given to a flat rock.

1,287.—**Petite Tournière.**—R. Br., *toûr*; Fr., *tour*, tower. Perhaps "rock formed like a tower." Com. W., *twr*, heap, pile; Heb., *tir*, palace, castle, whence Tyre; W., *tyrio*, to rise or throw up, to heap; Ger., *turm*, tower.

1,288.—**Longue Pierre.**—R. See 75, 157, 196.

1,289.—**Petite Longue Pierre.**—R. See 1,288.

1,290.—**Longue Gripe.**—R. Br., *griped*, snare; com. Fr., *gripper*.

1,291.—**Founiais.**—R. Br., *founn*, *foun*, *founnuz*, *fonnuz*, thick, substantial. See 563.

1,292.—**Le petit Founnais.**—R. See 1,291

1,293.—**Reverendière.**—R. Br., *re*, *remer*, *rever*; W., *rhy*, over, too much; Br., *endan*, *endeon*, *endeun*, under; com. Eng., *under*; Br., *dindan*, *didan*, *indan*, under; W., *tan*, *dan*, *tanodd*, *oddi tanodd*.

1,294.—**Traiffe.**—Br. and W., *tra*, thing; Br., *ev*, *cf*, *iv*, *if*, spongy. Perhaps "spot where the water is engulfed."

1,295.—**Fourmière.**—R.

1,296.—**La Tête Capière.**—R. Br., *cap*, point or end of rock; com. Eng., *cape*; Br., *ier*, *er*, rock. See 76, 550.

1,297.—**Les Demies.**—R. This term is invariably applied to rocks that are uncovered at half tide.

1,298.—**Galeu.** } R. The Kel. term *gal* means "hard, powerful," some-
Galeux. } times "round." In this case, however, the word may signify "chalky" Br., *goleu*. See 37, 326, 479. Br., *galet*, *calet*, hard, firm; W., *caled*; com. Lat., *calx*, *calleo* On the other hand might it not be a corruption of Br., *gwall* = Lat., *pejor*, and Lat., *lux*, light; whence *galus*. Com. also 1,109. Br., *gwallo*, forked; com. W., *gwall*, defect; W., *goleu*; Br., *golou*, light

1,299.—**Banquette.**—R. "Rest." See 156.

1,300.—**La demie Crabière.**—R. See 1,297.

1,301.—**La boue arces.**—R. The word *boue* means a "sunken rock," in a few cases "white rock." Br., *hars*, obstacle, opposition. See 497.

1,302.—**La pierre de la Moue.**—R.

1,303.—**La boue St. Michel.**—R.

1,304.—**Godin.**—R. O. Fr., *godin*, beautiful, also favourite. On the other hand, Br., *god*, daisy, hence rock formed like a daisy, irregular or anfractuous. Br., *gôd;* W., *cod*, *cwd*, *coden*, pocket, pouch, bosom, hence curve or curved surface.

1,305.—**Godinet.**—R. Of or belonging to *Godin*, or dim. of *Godin*.

1,306.—**Roundelle.**—R. Perhaps *Rondelle*, "round rock."

1,307.—**La Cannette.**—R. "Washed or whitened by the sea." Br., *kana*, to wash; W., *canu*, to whiten. See 590 and 876. Br., *cana*, to sing or make a noise.

1,308.—**La pointe du Gentilhomme.**—P. A name found in Andrew Gray's Map.

1,309.—**La Moie Sonnière,** or La Muissonnière. } R. "The resounding mound" or "bird mound."

1,309a.—**La Fourquie.**—R. See 94.

1,310.—**L'Eclait.** **L'Eclet.** } R. "The pebble" or perhaps "sonorous." Br., *eyled*, *hegleo*.

1,311.—**La boue zarée.**—R. A name found in Gray's Map. Possibly der. from Br., *adarre*, *adarrhe*, again, anew; Ar., *adar*. In this case a second rock. Different meanings may be applicable Br., *adarz*, upright; *adre*, behind; Br term *ad* = Lat. *re*. On the other hand, Br., *tarz*, violent blow, fracture, crevasse; pl., *tarziou*, piercing sound of the sea against the rocks; W., *tard*, breaking out, issue, vent, bubbling up, flowing forth; com. Ir., *tarrint*, to struggle, seize by force, also Heb., Ch., Syr., Sam., *tarad*, to eject, expel; Ar., *tarada;* San., *trad*, to press; Lat., *trudo;* Eng., *thrust*.

1,312.—**La Mielle.** **La Prise à Chevaux.** } B. These names are given to the largest of the two shell beaches on the north-east coast of Herm The second name is found in Andrew Gray's Map of Guernsey and Herm. N. Fr., *mielles*, waste spot near the sea, otherwise called *dunes;* Gael., *mill*, waste, savage; N. Fr., *miele*, according to Fleury, "plaine de sable, semée de touffes de milgreux, de fenouil et autres plantes analogues. Mot francisé par Victor Hugo."

1,313.—**Les Jacquettes.**—R.

1,314.—**Sardinière.**—R. See 1,386.

1,315.—**Les Quillons.** **Aiguillons.** } R. The first form appears in Gray's map. Br., *kelc'hia*, to surround; com. W., *cylchynu;* Ar., *al eyone*, the centre. I have a strong presumption the form is corrupted. See 29.

1,316.—**Equitelez,** or Equetelez } R. The expression may signify "sign of the passage."

1,317.—**Mullier.**—R. Br., *meuli;* W., *moli*, to praise. See 142.

1,318.—**Bel Va.**—B. The expression is probably corrupt. I have seen it spelt Belval, Belvoir and Bel vue or view. Br., *be*, spot; *va*, living. "Spot teeming with life." This might agree with the character of the place, as it is one of the shell beaches. On the other hand it might be a corruption of bivalve.

1,319.—**Haut Vergin,** or Haute Vierge. } R. Possibly a corrupted form. Perhaps Br., *gwerh*, green; W., *gwyrdd;* W., *gwrn*, cone; Br., *gwern*, mast, and possibly point.

1,320.—**Noire Pute.**—R. The following note appears in Métivier's Dict.: "*Pute*, ivette marine blanche ou noire, ainsi nommée de la ressemblance de ses feuilles à celles de l'if, du pin et du melèze. C'est l'origine de certains rochers. Pute représentait en France les noms grecs *pitus* ou *peuke*, sea ground pine. Lat., *chamapithys*." On the other hand, Br., *put*, hard, rough, bitter.

1,321.—**Caquorobert.**—P. According to Métivier "Castiau Robert." Roberts' house.

1,322.—**Trainez.** **Putes Trainez.** **Putrainée.** R. Br., *tráez, traiz, treiz, treaz, traezin*, sand, cove, shore; Br., *treaz-nij*, very fine sand blown by the wind; Br., *nijal*, to fly; *nicha*, to be blown about; com. Gr, *nechein*; W., *nithio*, to winnow; Heb., *nitza, natza*, to fly; *noaph*, to spread, flow; Br., *traeza*, to reduce to sand, dissolve, scatter; Br., *trezou*, the tide is going down; W., *traeth*, tract, sand, beach; *trai*, decrease, ebb tide, passage; Br., *put*, hard, rough, disagreeable, acid. The rough sandy rocks. The Kel. term. *ez* = Fr. term. *euse*. Putrainée might mean "I am hard or rough." See 1,320.

1,323.—**La Selle.**—R Visible. Br, *sell*, look, view; *sellein*, to look; W., *sel*, view. See 451. Br., *sell-lem*, terrible look or view; *lem*, sharp, cutting; *lemma*, to sharpen. The same Kel. root appears in Thelhun, Thelheun (Thehun). Br., *thel* = *sel*, See 228. Ir., *Soûl* = Eng., eye. *Soûl* is very much allied to Lat. *sol*. O. Br., *sul* = sun. I think it right to state that the rock does not by any means look like a saddle.

1,324.—**Les petits Bouillons.**—See 83.

1,325.—**Le Moulinet.**—R. Br., *moul*, rounded. See 6, 104.

1,326.—**Ségard.**—B. Salt or salt water spot. Br., *seg*, salt.

1,327.—**Les Bouillons.**—See 83.

1,328.—**La pointe de Sauzebourge** or Bruge. P *Bruge*, the name of a small plant; *saoz*, English. The real signification is uncertain.

1,329.—**Saut de Boue.**—R.

1,330.—**Meulettes.** **Mulet.** R. "Praised rock." Br., *meuli*; W., *moli*, to praise. See 142. Fr., *mulet*, mullet.

1,331.—**La Rosière.**—R. "Little mount." Br., *roz, ros, ross*, elevated point of land inclining towards the sea; W., *rhôs*.

1,332.—**La Percée,** or Passe Percée. A name given to the Channel separating Herm from Jethou.

1,333.—**Mouette.**—R.

1,334.—**Vermerette.**—R.

1,335.—**L'Epec.**—R. See 425. "Point."

1,336.—**Grande Alligande.**—R. Kel. "Above the others." *Alli* = above; gand = others; *e* = pl. term.

1,337.—**Le petit Creux.**—R.

1,338.—**Le Creux.**—R.

1,339.—**L'Etacré.**—R. See 78, 158, 546.

1,340.—**Viel.**—R. See 863.

1,341.—**Brehon.**—I. Perhaps "I am an arm." Br., *bre*, arm.

1,342.—**Brehonnet.**—R. Dim. of Brehon.

1,343.—**Boue à Basse.**—R.

1,344.—**Traye.**—R. Possibly a corrupted expression.

1,345.—**Lionnaise.** **Grand Lioné.** R. Br., *li-on-nez*, spot near the nest.

1,346.—**Corbet.**—R. Rock seen partly difformed. See 1,177.

1,347.—**Les Lionnais.**—R. See 1,345.

1,348.—**Les Hommes.**—R.

1,349.—**Rockeret.**—R.

1,350.—**Hermetier.**—R. Probably Herm Rock. One map gives (Hermatu?), and I have seen it spelt "*air montu*." The term is no doubt corrupt.

1,351.—**Fondu.**—R.

1,352.—**Rouais?**—R. Perhaps "Rouêtre." See 357.

1,353.—**Gripe d'Aval.**—R. The lower snare. See 1,290.

1,354.—**Houmet.** } R. N. Fr, *houmet*, rock; com. Sw., *holm*, islet.
Plat Houmet. } See 1.

1,354a.—**Le Port aux Valais.**—B. An appropriate term, as the Bay is situated opposite the Vale.

1,355.—**Roustel.**—R. See 347.

1,356.—**Boue Genneté.**—R. "Appearing or opening." 1. Br., *genel*, to beget, appear; W., *genel*, relating to birth; *cenedlu*, to beget, generate; com. Lat., *gignere;* Gr., *gennan*, to be born; San., *gan*. 2. Br., *genou*, opening; W., *geneu*. See 445.

1,357.—**Gros Pied** or Grosse Pierre. } R.

1,358.—**Rousse.**—R. Br., *ruz;* com. It., *rosso;* W., *rhudd;* Fr., *roux*.

1,359.—**Blanché.** **Blanc Pied.** } R. No doubt "white."

1,360.—**Crevichon.**—I. Kel., *cre*, strong, rocky; *ic'h*, islet, spot; *on*, I am. "I am a rocky or strong islet."

1,361.—**La demie de Jethou.**—R. See 1,297, 1,362.

1,362.—**Jethou.**—I. Different meanings are applicable. Br., *yet*, *iet;* pl., *ietou*, signals. See 947. Ward and Lock's Guide Book says "Jethou signifies Grande Hougue, great watch tower, and in old piratical times fires were lighted there to warn the Guernsey people of the approach of water thieves." On the other hand, Br., *iethou*, lit. roaring, hence a spot very much exposed to the wind. *Siata* is said to be an ancient name of Jethou, meaning "high island." *Ketchou* or *Keteholm* is mentioned as another form of the word, in this case meaning "as large" or "as far as *ou* or *holm*. See note 1. Br., *ke iethou*, place of roaring.

1,363.—**Tinker.**—R. Spelt too (Tenner?).

1,364.—**La rouge Fauconnière.**—R. A red-headed rock situated behind Jethou. Perhaps "rock of the hawk."

1,365.—**La petite Fauconnière.**—R.

1,366.—**La grande Fauconnière.**—R. This rock is surmounted by a white tower.

1,366a.—**Le pertu.**

1,367.—**Clavelée.** **Clavlaix.** } R. Perhaps "exposed to the wind." Br., *avele*, wind. See 253, 382, 383.

1,368.—**Fouquée.** **Fougues.** } R. The term seems corrupted.

1,369.—**Le pertuis au Normand.**

1,370.—**La Blanche.**—R.

1,371.—**La Platte.**—R. See 45.

1,372.—**Aiguillons.**—R. See 29, 107.

1,373.—**Le Douit.**—R.

1,374.—**La Goubinière.**—R. Br., *gou*, *gaou;* W., *gau*, false, lying. Perhaps "deceitful and steep rock." Br., *pin* = *bin*, to climb.

1,375.—**La boue de la Goubinière.**—R. See 1,374.

1,376.—**La Grosse Ferrière.**—R. Ferrière is an old family name, but it must be noted that the Kel. term *fer* or *ffer* signifies "strong"; *er*, *ier*, rock. The term is applicable. The Kel. root appears in *père*, *péron*, *perelle*, *l'érée*. See 186, 452, 550, 581.

1,377.—**Profonde.** **Parfonde.** } R. *Parfonde* = like, similar.

1,378.—**Les Anons** or Annong. } R. "The ghosts." Br., *annaoun ;* com. W., *annawn* = Lat. *infortunium*.

1,379.—**Barbées. Barbais.** } R. Br., *barr, barb*, lit. receiving knocks or blows, hence probably "spot where the sea dashes." Com. W., *bâr*, ire, fury.

1,380.—**Les Audamnes.**—R. Possibly *au damnez*. Br., *dam*, fairy ; *nez*, nest. The nest of the fairies or sirens.

1,381.—**Musé.**—R. Br., *mus, muis*, flat.

1,382.—**Demi de Musé. Demie Ferrière.** } R. See 1,297, 1,376, 1,381.

1,383.—**L'Etacré.**—See 78, 158, 546.

1,384.—**Vraie.**

1,385.—**Les Têtes enragées.**—R.

1,386.—**Sardrette** or Sardrière. } R. Perhaps from N. Fr., *sarde*, bream.

1,387.—**Les Têtes d'Aval.**—R. "The lower heads." An appropriate term. These are the southernmost of all Herm rocks.

LIST OF THE ARANEIDEA OR SPIDERS OF THE CHANNEL ISLANDS.

BY FREDK. O. PICKARD-CAMBRIDGE, B.A., F.Z.S.

—o—

ANOTHER collection of spiders made in the island of Alderney has been kindly sent to me for identification by E. D. Marquand, Esq., A.L.S. It contained numerous specimens which were not mature, and therefore although there were in the collection some hundreds of spiders, the total number of species does not exceed sixty-seven. One mentions this, not for the purpose of discouraging a general indiscriminate collecting of everything that comes into the spider-net, but merely to account to the collector for the comparatively small number of species actually placed on record. The method of collecting followed by Mr. Marquand is the best possible, especially in the case of the more minute forms.

The collection, too, furnishes most valuable additions to the list of the spiders already recorded for the Channel Islands in general, as well as to that for the island of Alderney in particular; no less than nineteen species having been added by Mr. Marquand to the Channel Island list, and forty-six to the list for Alderney.

Amongst the rarer species may be mentioned *Phœocedus braccatus (Drassus braccatus)* which has been taken on two occasions only on our side of the Channel, along the southern coast; *Drassodes minusculus*, which occurs sometimes in plenty under seaweed on the coast; *Drassodes sylvestris*, *Agræca proxima*, *Pholcomma gibbum*, and *Crustulina guttata*. The two last named little spiders belong to the group of which the adult males possess the stridulating organ at the base of the abdomen, mentioned in my last paper in connection with *Asagena phalerata* and other species.

There were also in the collection numerous examples of an interesting though minute species of "*Walckenæria*," *Pepono-*

cranium ludicrum, one of the many whose cephalic region is in the male sex carried abnormally upwards, and in this case backwards, some of the eyes also accompanying the movement, and leaving their fellows in the normal position on the cephalic ground-floor. It is difficult to account for these extraordinary developments in the male sex, or to suggest what possible use they may be in the struggle for food, or what advantages they may confer in the various exigencies of love. They can scarcely be for fighting purposes, as are the luxuriant antlers in the males of the Deer tribes, though they may possibly point to the greater developmental vigour of the male sex, and furnish an instance of what is known as the *Katabolism*, or general—breaking-out-in-any-direction—tendency so characteristic of that sex.

But even this sort of breaking-out must, in our accepted theories of evolution, either be directly advantageous, or at least not disadvantageous, in the energies necessary for the satisfaction of the cravings of hunger, and the gratification of the emotions of love,—the two main motives which, when all is said and done, are directly responsible for the phenomena of physical existence, not excluding that of civilised man.

Whether perhaps the eyes in the male sex in the little spiders in question, of which *Walckenæria acuminata* (whose eyes are carried up on a tall slender tower, is a notable example), being raised above the general level of ordinary means of observance over the tops of the taller trees in the moss-forest, can thus see further in their love affairs, and so avoid the mischance of proceeding further in that direction and possibly faring worse, one would not like to declare; but at any rate, even if it were so, the ability to sweep a wider horizon would at some point be counterbalanced by an increasing difficulty of running to and fro amongst the trees, and in this way undue extravagance in head development doubtless meets with some salutary checks.

Mr. Marquand's collection now brings the total number of species of Spiders (*Araneidea*) taken in the island of Alderney to sixty-nine (69) and that for the whole of the Channel Islands to one hundred and forty-two (142). These do not include the Harvest-men (*Opiliones* or *Phalangidea*) of which Mr. Marquand has in his recent collection added two species which are new to the Channel Islands.

The following list contains the names of the species obtained in the island of Alderney which have not been previously recorded, those which have not before occurred in the Channel Islands being marked with an asterisk (*).

FAM. DYSDERIDÆ.

Dysdera cambridgii, Thor.
Segestria senoculata, Linn.

FAM. DRASSIDÆ.

Drassodes lapidosus, Walck.
D. troglodytes, C. L. Koch.
***D. sylvestris**, Blackw. A single adult male.
***D. minusculus**, L. Koch. A single adult male.
***Scotophæus blackwallii**, Thor.
***Phoeocedus braccatus**, L. Koch. Two adult females.
***Prosthesima longipes**, C. L. Koch.
P. pedestris, C. L. Koch.

FAM. CLUBIONIDÆ.

***Clubiona comta**, C. L. Koch.
Chiracanthium erraticum, Walck.
***Agroeca proxima** O. P.-Camb.
***Liocranum rupicolum**, Walck.

FAM. DICTYNIDÆ.

Amaurobius ferox, Walck.

FAM. AGELENIDÆ.

Tegenaria atrica, C. L. Koch.
T. derhami, Scop.—**T. domestica**, Clk.—**T. civilis**, Blk.

FAM. THERIDIIDÆ.

Theridion bimaculatum, Linn.
T. pallens, Blackw.
T. varians, Hahn.
Pholcomma gibbum, Westr.
Crustulina guttata, Wid.
***Laseola inornata**, O. P.-Camb.
***Enoplognatha thoracica**, Hahn.

FAM. MIMETIDÆ

***Ero thoracica.**

FAM. ARGYOPIDÆ.

Stemonyphantes lineatus, Linn.
Linyphia triangularis, Clerck.

Lepthyphantes tenuis, Blackw.
***L. blackwallii,** Kulcz.
Poeciloneta variegata, Blackw.
Bathyphantes concolor. Wid.
***Dismodicus bifrons,** Blackw.
***Peponocranium ludicrum,** O. P.-Camb. Numerous adult examples of both sexes.
Meta segmentata, Clerck.
M. merianæ, Scop.
***Aranea cucurbitina,** Clerck. (Epeira cucurbitina.)

FAM. **THOMISIDÆ.**

Oxyptila praticola, C. L. Koch.
Philodromus aureolus, Clerck.

FAM. **PISAURIDÆ.**

Pisaura mirabilis, Clerck.

FAM. **LYCOSIDÆ.**

Lycosa terricola, Thor.
***L. leopardus,** Sund.
L pulverulenta, Clerck.
***Pardosa proxima,** C. L. Koch.

FAM. **SALTICIDÆ.**

Euophrys frontalis, Walck.
***Attus pubescens,** Fabr.
***Ælurops v-insignitus,** Clerck.

ORDER **PHALANGIDEA.**

***Phalangium opilio,** Linn.
***P. parietinum,** De Geer.

ADDITIONS TO THE FLORA OF ALDERNEY.

BY MR. E. D. MARQUAND, A.L.S., EX-PRESIDENT.

———o———

A CONSIDERABLE number of unrecorded plants have been discovered in Alderney during the past two summers, and as some of these are new to the Channel Islands, I think it well to note them without further delay, as a first supplement to the *Flora of Guernsey*.

Probably the most interesting plant that has yet been found in Alderney is *Isoetes Hystrix*, which it was my good fortune to discover last May. It grows in profusion on one part of the cliffs, a little east of La Quoire, at an elevation of some 150 to 200 feet above the sea; but I have not as yet detected it anywhere else in the island. It may be remembered that *Isoetes* was not known to occur anywhere in Europe further north than Guernsey, so that its occurrence in Alderney is of the greatest interest, especially to French botanists, for there seems now every probability that the plant will be found on the cliffs of La Hague, just opposite.

The best additions among Flowering Plants are *Orchis morio*, *Juncus capitatus*, und *Lemna trisulca*. The previous records for the last species within the Sarnian area were ancient and somewhat nebulous. Many notes which I have collected on the Alderney rarities must remain over for the present; but one or two may be given here. *Calamintha clinopodium* occurs thinly scattered in a grass field behind Essex House, about a quarter of a mile distant from the Rochers station recorded in the *Flora*. It is good to have two localities for this rare species. One gigantic plant of *Silene conica* which I noticed in 1902 at Longy, among many tall ones, measured twenty-one inches in height above the ground,—probably a record size for this species! A single specimen of the beautiful Vetch *Vicia varia* was found on the cliffs last summer, so that possibly some day it may become established here. *Filago germanica* and *Sagina nodosa*, which I had not seen when the *Flora* was written, I have since found: the former in good quantity on

the cliffs near the Hanging Rock, and *S. nodosa* rather plentifully on the northern slope of Fort Albert, and also on the common at Fort Houmet. I am now able to give the specific name of the doubtful *Sparganium* which grows in Longy Pond. One specimen fruited in 1902 and proved that the plant is *S. ramosum*, not *S. neglectum*. *Linum usitatissimum* and *Cannabis sativa* were growing on a rubbish heap on the roadside on Butes Hill in 1901. These plants are hardly entitled to a place in the Flora, but it is as well to mention their occurrence in case they should ever become naturalised. *C. sativa* is noted in the *Flora Sarnica* as naturalised in Jersey. The number of Flowering Plants recorded for Alderney now amounts to 512 species.

An important addition has been made to the record of Seaweeds. From the following list it will be seen that sixty-two species have been added, of which no less than thirty are new to our islands. They were all collected by my wife and myself during the summer of 1901, and were forwarded in a fresh condition to, and identified by, Mr. E. A. Batters, B.A., F.L.S., to whom I desire to express my most grateful acknowledgments. This raises the number of Marine Algæ recorded for Alderney to 218 species. In the following list those which are new to the Sarnian islands are marked with a star (*).

A word or two about Burhou. It is fortunate that I carefully catalogued the scanty flora of this curious islet before the cottagers took possession, for although they lived there only about a twelvemonth, the cultivation of potatoes, cabbages, onions, and other vegetables, and the grain used in feeding the pigs and fowls, have been the means of introducing several entirely new colonists which will probably retain their footing for many a long year.

On the 13th of August, 1902, I paid a short visit to Burhou, and found the aspect of things very much altered in the immediate neighbourhood of the house. A few feet from the door there was a large clump of nettles (*Urtica dioica*), and all round the house *Rumex acetosella* was growing in profusion, —mostly seedlings. The grasses were no longer unrepresented, for there was *Poa annua* in small patches, of which I counted four or five. In many places near the house *Solanum nigrum* was very conspicuous, in one direction reaching as far as the pebbly beach. With more time at my disposal I am certain I should have discovered other novelties; but even the few I have mentioned suffice to show how rapidly the native vegetation of an island may be affected by the direct or indirect agency of man.

Sisymbrium thalianum, *Gaud.* On one part of the cliffs near La Quoire, in good quantity.

Linum usitatissimum, *L.* Several plants on a rubbish heap on the road-side, Butes Hill, in 1901 and 1902.

Apium graveolens, *L.* Very sparingly on the side of a small streamlet above Platte Saline.

Galeopsis Tetrahit, *L.* One plant in a potato field at the upper part of St. Anne's, in August, 1901.

Chenopodium ficifolium, *Sm.* Roadside, Butes Hill, one plant, in 1901.

Cannabis sativa, *L.* Rubbish heap on Butes Hill, several plants in 1901.

Orchis morio, *L.* Plentiful all over the upper part of Maunez Hill: one plant on the Blaye, towards Rose Farm.

Juncus capitatus, *Weig.* Small scattered patches in many places on the cliffs east of La Quoire.

Lemna trisulca, *L.* Plentiful in Longy Pond; easily accessible during the very dry summer of 1901, when the pond was nearly dried up.

Isoetes Hystrix, *Dur.* Abundant at the top of the cliffs to the east of La Quoire, over a space of about 100 yards, and on the slopes below.

SEAWEEDS.

***Dermocarpa prasina,** *Born.* Platte Saline, on *Polysiphonia*

***Hyella caespitosa,** *Born.* and *Flah.* Platte Saline, growing in the chalky shell of a limpet.

***Calothrix parasitica,** *Thur.* Longy Bay; between cortical cells of *Castagnea virescens.*

***Mastigocoleus testarum,** *Lager.* Platte Saline; in shell of limpet.

***Ulva lactuca,** *Linn.* Platte Saline. Corbelets.

***Bulbocoleon piliferum,** *Prings.* Longy Bay, creeping between cortical cells of *Leathesia difformis.*

***Epicladia Flustrae,** *Rke.* Platte Saline.

Rhizoclonium tortuosum, *Kutz.* Longy Bay. Platte Saline.

***Cladophora sericea,** *Kutz.* Platte Saline.

***C. uncialis,** *Harv.* Braye Bay.

***C. glaucescens,** *Griff.* Platte Saline.

C. albida, *Kutz.* Longy Bay.

Codium adhaerens, *C. Ag.* Longy Bay.

Punctaria latifolia, *Grev.* Platte Saline. Corbelets.

Streblonema fasciculatum, *Thur.* Var *Simp ex,* Rke. Platte Saline, growing between the cortical filaments of *Castagnea virescens.* Fort Houmet, in *Leathesia.*

***Ectocarpus clandestinus,** *Sauv.* Longy Bay.

***E. simplex,** *Crn.* Braye Bay.

***E. arctus,** *Kutz.* Braye Baye. Fort Houmet, on *Zostera.*

E. confervoides, *Le Jol.* Braye Bay. Fort Houmet.

***Phloeospora (Ectoc.) brachiata,** *Born.* Platte Saline.

***Myriotrichia clavaeformis,** *Harv.* Longy Bay. Braye Bay.

M. filiformis, *Harv.* Longy Bay. Braye Bay.

***Ascocyclus sphaerophorus,** *Sauv.* Braye Bay, on *Rhodymenia palmata.*

***A. orbicularis,** *Rke.* Fort Houmet.

***Hecatonema maculans,** *Sauv.* Longy Bay, on *Polysiphonia fastigiata.* Fort Houmet and Platte Saline on *Corallina.*

Mesogloia vermiculata, *Le Jol.* Longy Bay. Braye Bay. Corbelets.
Liebmannia Leveillei, *J. Ag.* Corbelets.
***Castagnea Zosterae,** *Thur.* Braye Bay.
Petrospongium Berkeleyi, *Nag.* Braye Bay. Platte Saline.
***Leathesia crispa,** *Harv.* Parasitic on *Chondrus crispus.* Platte Saline. Fort Houmet.
Dictyopteris polypodioides, *Lam.* Braye Bay.
Erythrotrichia carnea, *J. Ag.* Fort Houmet.
***E. reflexa,** *Thur.* On *Corallina* with *Hecatonema;* rocks behind Fort Houmet. Only found once before in Britain.
***Porphyra leucosticta,** *Thur.* Platte Saline.
***Chantransia virgatula,** *Thur.* Corbelets Bay, on *Ceramium rubrum.*
***C. secundata,** *Thur.* Longy Bay. Fort Houmet.
***Nemalion lubricum,** *Duby.* Behind Fort Houmet, at extreme low water mark
Gelidium pulchellum, *Kutz.* Fort Houmet.
Phyllophora palmettoides, *J. Ag.* Braye Bay.
Gymnogongrus norvegicus, *J. Ag.* Braye Bay.
Catenella Opuntia, *Grev.* Rather common all round the coast, on rocks just below high water mark.
Lomentaria clavellosa, *Gaill.* Longy Bay.
Nitophyllum Gmelini, *Harv.* Corbelets Bay.
Polysiphonia sertularioides, *J. Ag.* Longy Bay Braye Bay. Rocks behind Fort Houmet.
Spermothamnion Turneri, *Aresch.* Corbelets.
***Trailliella intricata,** *Batt.* (*Spermothamnion intricatum,* Rev. Cat.) Longy Bay.
Ptilothamnion pluma, *Thur.* Corbelets.
***Griffithsia devoniensis,** *Harv.* Corbelets.
***Rhodochorton membranaceum,** *Magn.* Longy Bay, parasitic on *Sertularia.*
***Callithamnion polyspermum,** *C. Ag.* Corbelets.
C. tetragonum, *C. Ag.* Platte Saline.
C. granulatum, *C. Ag.* Platte Saline.
C. byssoides, *Arn.* Platte Saline.
Ceramium strictum, *Harv.* Platte Saline.
C. tenuissimum, *J. Ag.* Longy Bay.
C. flabelligerum, *J. Ag.* Fort Houmet.
Melobesia membranacea, *Lam.* Fort Houmet.
M. pustulata, *Lam.* Platte Saline, on *Chondrus crispus.*
***M. farinosa,** *Lam.* Platte Saline.
M. corallinæ, *Crn.* Fort Houmet.
Corallina squamata, *Ellis.* Platte Saline.
C. rubens, *Ellis.* Braye Bay. Platte Saline. Corbelets.

ADDITIONS TO THE LIST OF ALDERNEY INSECTS.

BY MR. W. A. LUFF.

—o—

THE whole of the insects on the following list, with only one exception, have been captured by Mr. E. D. Marquand, A.L.S., during the present year (1902).

Although the year has not been very favourable for collecting, Mr. Marquand has succeeded in adding no less than 47 species to the list, besides taking fresh specimens of many of the rarer species before recorded.

A second specimen of the rare beetle *Emus hirtus* (recorded in the list for 1900) has been taken, also another example of *Necrophorus germanicus*. The large bloody-nosed beetle *Timarcha lævigata*, one of the commonest beetles in the South of England, and unaccountably absent from Guernsey, has again been found in some numbers on the cliffs. That fine *Aculeate*, *Philanthus triangulum*, a very rare British species, only one specimen of which was recorded in the previous list, has been rather common.

Five species of bees have been added, two of which, *Sphecodes reticulatus* and *Nomanda solidaginis*, are new to the Channel Islands list.

Five species of *Lepidoptera* are additions, of these *Triphæna subsequa* has not been taken in Guernsey, and *Agrotis valligera* appears to be much commoner in Alderney than with us.

The most interesting of the beetles is *Meloe rugosus*, one extremely small female specimen of which was captured. It is one of the rarest species of the genus.

Among the *Ichneumon* flies many fine and rare species occur.

I have much pleasure in acknowledging the valuable assistance rendered in examining and naming specimens, by the Rev. E. N. Bloomfield, M.A., F.E.S., Messrs. Edward

Saunders, F.L.S., F.E.S., Claude Morley, F.E.S., G. C. Champion, F.Z.S., and R. McLachlan, F.R.S.

LEPIDOPTERA.

HETEROCERA (Moths).

Ennomos tiliaria, *Bk.* (The Canary Shouldered Thorn.) One specimen captured on September 6th.

Triphæna subsequa, *H.B.* (The Lesser Yellow Underwing.) Two specimens.

Agrotis valligera, *S.V.* (The Archer's Dart.) Not uncommon at Platte Saline and on Longy Common.

Ennychia cingulalis, *L.* One specimen.

Dasycera sulphurella, *F.* One.

HEMIPTERA-HETEROPTERA.

Aphanus Rolandri, *Lim.* Two specimens. This species is rare in England.

HEMIPTERA-HOMOPTERA.

Athysanus communis, *J. Sahl.* Not uncommon.

NEUROPTERA.

NEUROPTERA-PLANIPENNIA.

Micromus paganus, *L.* Common.

M. variegatus, *Fab.* Two specimens.

TRICHOPTERA (Caddis-flies).

Limnophilus affinis, *Curt.* One specimen.

ORTHOPTERA.

Acheta domestica, *L.* (House Cricket.) I received specimens from Alderney some years ago and have since been informed that they occur in several houses in the town.

COLEOPTERA.

Cymindis axillaris, *F.*

Badister bipustulatus, *Fab.*

Silpha obscura, *Linn.* Common.

Scymnus frontalis, *F.*

Serica brunnea, *Lin.*

Geotrupes typhæus, *L.* Several female specimens.

Cassida viridis, *F.*

Meloe rugosus, *Marsh.* One extremely small female.

HYMENOPTERA.

HYMENOPTERA-ACULEATA.

Mellinus arvensis, *Linn.*

Oxybelus uniglumis, *Linn.* Not uncommon.

Sphecodes reticulatus, *Thoms.* A rare species as British.

Halictus brevicornis, *E. Saund.*
Nomanda fucata, *Pans.* Two specimens, rare in Britain.
N. solidaginis, *Pans.*

ICHNEUMONIDÆ.

Ichneumon medicoxa, *Thoms.*
I. derasus, *Wesm.*
I. nigritarius, *Fab.*
I. perscrutator, *Wesm.*
I. anator, *Fab.*
I. derogator, *Wesm.*
Amblytelus divisorius, *Grav.* Two specimens.
Pimpla? graminellæ, *Sch.*
Linocerus macrobatus, *Grav.*
Perithous mediator, *Fab.* Common.
Bassus pulchellus, *Grav.*
Centeterus opprimotor, *Grab.*
Lissonota lineata, *Grav.*

CYNIPIDÆ.

Rhodites spinosissimæ, *Giraud.* Galls are formed by the larvæ on the wild rose, *Rosa Spinosissima.*

TENTHREDINIDÆ.

Blennocampa fuscipennis, *Flor.*
Emphytus cinctus, *Linn.*
Cladius padi, *Linn.*
Nematus gallicola, *Steph.*

DIPTERA.

Cecedomyia cratægi, *Wtz.* The larvæ feed on the common hawthorn, causing rosettes or clusters of deformed sessile leaves.

C. urticæ, *Perris.* Common on nettles, causing galls on almost every part of the plant.

Urophora solstitialis, *Linn.* The larvæ cause woody galls on the flower heads of *Centaurea nigra* (Knap Weed).

Acrocera globulus, *Pans.* One specimen captured of this very curious fly.

GUERNSEY SUNSHINE FOR 1902.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

AGAIN we have experienced a year of low sunshine, the total having fallen below the average of the nine years, during which I have recorded sunshine, by no less than 177 hours.

Only one of these nine years has shown a smaller record, viz., 1894, that year having given 1,724 hours against 1,768 in 1902.

TABLE I.

GUERNSEY SUNSHINE.

Nine Years' Totals, Mean and Comparisons.

Years.	Annual Totals. *Hours.	*Hours below the Sunniest Year.	*Hours above or below the average of nine years.	Percentage of possible Sunshine.	Sunless Days.	Sunniest Month. *Hours.	Sunniest Month. Month.
1894.....	1,724	490	— 221	38	49	230	May.
1895.....	2,069	145	+ 124	46	50	310	May.
1896.....	1,825	389	— 120	41	61	307	May.
1897.....	1,874	340	— 71	42	53	305	July.
1898.....	2,090	124	+ 145	47	40	338	July.
1899.....	2,214	—	+ 269	49	43	340	July.
1900.....	2,026	188	+ 81	45	51	326	July.
1901.....	1,897	317	— 48	42	50	276	May.
1902.....	1,768	446	— 177	39	53	285	July.
Mean ..	1,945	271	..	43	50	338	July.

* Decimals have been omitted. The nearest whole number is used.

You will see by the first table that there are four years above the average and five years below. As stated last year the sunshine increased year by year from 1896 to 1899, which was the year of the highest record, and has diminished progressively since. This gives a wave when represented as a curve, with three years on either side of the apex.

TABLE II.

SUNSHINE, GUERNSEY, 1902. Station: Hauteville.

Months.	Totals in Hours.				Sunless Days.		Possible Sunshine.	
	1902.	Average of Nine Years.	Above the Average.	Below the Average.	1902.	Average of Nine Years.	1902. Per-cent'ge	Monthly Totals. Hours.
January	28·74	52·56	..	23·82	15	10	11	269
February ..	81·13	84·11	..	2·98	5	7	27	294
March	123·66	139·33	..	15·67	3	3	37	367
April	195·46	194·18	1·28	..	3	1	48	408
May.....	244·21	259·39	..	15·18	1	1	51	472
June	211·15	264·00	..	52·85	1	0	44	481
July	285·55	287·26	..	1·71	0	0	59	484
August	217·81	250·32	..	32·51	1	1	49	442
September ..	179·37	189·33	..	9·96	1	1	47	376
October	90 25	113·68	..	23·43	5	3	27	331
November ..	67·77	67·82	..	0·05	8	8	25	271
December ..	42·89	43·34	..	0·45	10	11	16	255
Totals ..	1767·99	1945·32	..	177·33	53	46	39	4454

One month, April, exceeded the average, the other eleven months fell below it. Even April's surplus was small, and (as will be seen in Table II.) had very little effect in modifying the deficit. The greatest deficit was that of the month of June, which was no less than 52·85 hours, August followed with a deficit of 32·51 hours. January and October gave over 23 hours each, while March and May were both more than 15 hours below their averages.

In sunless days January, April, June and October were above the average. March, May, August, September and November equalled the average. February and December were below the average. July had no sunless days. May, June, August and September but one each. On the whole year there were seven more sunless days than the average. The average sunless days for the six months, April to September inclusive, are four. This year three months gave seven.

The mean and average sunshine per day in each month is given in Table III.

TABLE III.

Months.	Daily Mean Sunshine for 1902. Hours.	Average Daily Mean Sunshine. Nine Years. Hours.
January	0·9	1·7
February	2·9	3·0
March	3·9	4·5
April	6·5	6·4
May	7·8	8·3
June	7·0	8·8
July	9·1	9·2
August	7·0	8·0
September	5·9	6·3
October	2·9	3·6
November	2·2	2·2
December	1·3	1·4
The Year	4·8	5·2

THE RAINFALL OF GUERNSEY FOR THE YEAR 1902.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

I AM able through the kind co-operation of the undermentioned gentlemen to give the rainfall at six stations this year. The increase in the number of stations must be an advantage because, as will be seen in the details of this paper, rainfall is very erratic, and the correct figures are only obtainable by digesting the reports from a number of stations.

The stations, their positions and elevations, as well as the observers, will be found detailed in the first table.

TABLE I.

Observer.	Position.	Elevation
		Feet.
Carey, Dr. F.	Villa Carey, Grange	180
Carey, Mr. J. J.	Claire Mare, Perelle	50
Collenette, Mr. A.	Beaulieu, Hauteville, 9 months	190
	Brooklyn, Fort Road, 3 months	300
Hocart, Mr. J.	Les Mielles, L'Ancresse	33
Robertson, Mr. J.	St. George, Castel	160*
Rowswell, Mr. B.	Les Blanches, St. Martin's	300

* The elevation of St. George's rain gauge is provisionally given as 160 feet, and is obtained from the elevation of the cross roads (176·5), but levelling has not so far been continued to the position of the gauge.

As will be known to most of the members, my station has been moved from Beaulieu, Hauteville, to Brooklyn, Fort Road. The move occurred on September 30th, the rainfall of that day being taken at Hauteville, and that of 1st October at Fort Road.

The comparisons of the last six years have proved that the town rainfall, as taken at Hauteville, was larger than that of the other stations. As the move is in the direction of Les Blanches, it is a question as to whether the excess of Hauteville over Les Blanches will be sustained. As far as can be judged Fort Road is still inside the area of greater rainfall, for, as shown by the following table, the fall of the last three months shows an excess for Fort Road over Les Blanches even

greater than the six years' average for the three months under consideration.

TABLE II.

HAUTEVILLE AND FORT ROAD RAINFALL

Compared with that of Les Blanches during the last Quarter, 1902, and Averages.

Months.	Averages of 5 years.		1902.	
	Hauteville.	Les Blanches.	Fort Road.	Les Blanches.
October	2·81	2·60	4·01	3·50
November	3·93	3·65	3·66	3·42
December	5·13	4·74	3·91	3·34
Totals	11·97	10·99	11·58	10·26
Differences	+0·98	—	+1·32	—

The year 1902 has been a dry one. The total is 33·98 inches against an average (60 years) of 36·52. Three months proved wet, viz., April, June and August. Owing to the incidence of these months the year divides itself into three periods. January to March inclusive was dry, with a deficit for the three months of 2·77 inches. April to September inclusive gave a surplus of 2·03 inches. The third period, October to December inclusive, gave a deficit of 1·80 inches. The total deficit of the year works out at 2·54 inches.

If, instead of considering Hauteville only, we take the whole six stations, we find that the averages give the same periods, but that owing to the smaller rainfall of the island as compared with the town, the differences are as follows:— 1st period, deficit 3·24 inches instead of 2·77 inches; 2nd period, a surplus of 1·61 inches instead of 2·03 inches; and 3rd period, deficit of 2·81 inches instead of 1·80 inches. The deficit for the year being 4·44 inches instead of 2·54 inches for Hauteville.

It will be remembered that each year since the commencement of the comparative tables I have found and corrected the factor needed to adapt the town figures to the ascertained rainfall of the whole island. It will be necessary to do this for a period of 20 years, out of which but six have elapsed. I, therefore, must content myself with the statement that the difference between the town and the whole island now stands at 2·37 inches. This is a smaller difference than I have shown before, and it is quite possible that in wet years, or after a series of wet years, the difference may sink to even a lower

figure. At present we are not justified in reasoning that, because we have had in dry years a difference of over three inches, we will retain that difference. All I can now say is that the rainfall of the Town as recorded by my own gauge has for six years been persistently above that of the remainder of the island. And as you have already seen that difference has not been interfered with by the change of station.

You will be able to study the details of the rainfall at all the six stations in the table given, when it is in your hands, but I may draw your attention to the small rainfall at Claire Mare, 28·50 inches, and the large one at St. George, 36·58 inches—a difference in 3 miles of 8·08 inches. Again, the difference between Villa Carey, Grange, with 30·06 inches, and Hauteville, 33·98 inches, viz., 3·92 inches, with only 1,500 yards between the stations, would be remarkable were it not that possibly there are ways of explaining these differences, which depend, I think, on peculiarities of the surroundings of the stations.

I have been peculiarly fortunate in obtaining, in my various changes of residence, very open neighbourhoods, and therefore have probably obtained the maximum or nearly the maximum rainfall.

As you are probably aware, Dr. Hoskins commenced the rainfall records at a station in New Street, and I have worked out the average of that station and find that the 14 years recorded there gave an average of 35·52 inches. The gauge was then moved to York Place, Candie, and the record there extended over 24 years, which averaged out at 38·04 inches. As the bird flies there is a distance of but 300 yards between York Place and Grange Villa, and yet Dr. Carey is recording but 33 inches. These facts point to the records being influenced by surroundings. Again, my own stations work out at 36 inches, which agrees with the mean of Dr. Hoskins' station, for Dr. Hoskins' mean for the two stations is 36·74 inches, and mine for the two stations, Le Hechet and Beaulieu, is 36·54 inches. We have also a new element introduced by the rainfall peculiarities of St. George. At this station the rainfall has been, during 1902, 36·58 inches, almost exactly the average rainfall of the 60 years, but (owing to the deficit) it is really 2·60 inches too high.

We are, therefore, faced with these difficulties. Claire Mare is recording excessively low falls, Grange too low a fall, l'Ancresse and Les Blanches are near the means of all stations, Hauteville and Fort Road is in excess of those means, and St. George very much in excess.

The peculiarities of each station require to be studied and comparisons made, and if possible a mean error for each station worked out. This I am now considering, and I have no doubt that I shall have the assistance of the other observers, for we are all actuated by the same desire, viz., to arrive at the true rainfall of the island.

TABLE III.

GUERNSEY RAINFALL FOR 1902.

Results of Observations at six Stations compared with the Averages.

Months.	1902.							The 60 Years' Averages.	Six Stations. Difference from the 60 Years' Averages.	Difference from the 60 Years' Averages. Hautevlle only.	Means of the four first Stations for Six Years.
	Hautevlle.	L'Ancresse.	Claire Mare.	Les Blanches.	St. George.	Grange.	Means of the six Stations.				
January ..	2·30	2·06	1·71	1·89	3·10	1·83	2·15	3·81	—1·66	—1·51	2·65
February..	1·57	1·74	1·58	1·68	0·90	1·46	1·49	2 62	— 1 13	—1·05	2·99
March	2·26	2·20	1·62	2·18	2·10	1·78	2·02	2·47	—0·45	—0·21	2·28
April	3·76	3·58	3·61	3·73	4·35	3·52	3·76	2·35	+1·41	+1·41	2·96
May	1·80	1·78	1·45	1·93	1·75	1·74	1·74	2·15	— 0 41	—0·35	2·09
June	2·38	2·49	1·70	2·24	2·47	2·12	2·23	2·01	+0·22	+0·37	1·89
July	2·08	1·50	1·79	2·16	1·94	1·75	1·86	2·20	—0·34	—0·12	1·10
August ..	3·81	3·94	3·25	3·97	4·06	3·75	3·58	2·42	+1·16	+1·39	3·74
September	2·44	2·71	2·72	2·62	3·30	2·30	2·68	3·11	—0·43	—0·67	2·62
October ..	4·01	3·31	2·84	3·50	4·09	3·10	3·47	4·83	—1·36	—0·82	2·50
November.	3·66	3·33	3·10	3·42	4·19	3·24	3·49	4·40	—0·91	—0·74	3·55
December	3·91	4·10	3·13	3·34	4·33	3·47	3·61	4·15	—0·54	—0·24	4·39
Seasons.											
Jan.-Mar.	6·13	6·00	4·91	5·75	6·10	5·07	5·66	8·90	—3·24	—2·77	7·92
Apl.-June.	7·14	7·85	6·76	7·90	8·57	7·38	7·73	6·51	+1·22	+1·43	6·94
July-Sept.	8·33	8·15	7·76	8·75	9·30	7·80	8·12	7·73	+0·39	+0·60	7·46
Oct.-Dec..	11·58	10·74	9·07	10·26	12·61	9·81	10·57	13·38	—2·81	—1·80	10·44
Yrs. Totls.	33·98	32·74	28·50	32·66	36·58	30·06	32·08	36·52	—4·44	—2·54	32·76

TABLE IV.

GUERNSEY RAINFALL, 1902.

Monthly Totals. Six Years' Means and 60 Years' Averages.

Months.	HAUTEVILLE.		L'ANCRESSE.		CLAIRE MARE.		LES BLANCHES.		St. George, Castel. 1902.	Villa Carey, Grange. 1902.	The 60 Years' Averages
	Monthly Totals.		Monthly Totals.		Monthly Totals.		Monthly Totals.				
	For 1902.	Means of the last 6 Years.	For 1902.	Means of the last 6 Years.	For 1902.	Means of the last 6 Years.	For 1902.	Means of the last 6 Years.			
January	2·30	3·02	2·06	2·43	1·71	2·36	1·89	2·76	3·10	1·83	3·81
February	1·57	3·05	1·74	3·00	1·58	2·69	1·68	2·84	0·90	1·46	2·62
March	2·26	2·57	2·20	2·42	1·62	2·14	2·18	2·04	2·10	1·78	2·47
April	3·76	3·15	3·58	2·73	3·61	2·69	3·73	3·21	4·35	3·52	2·35
May	1·80	2·30	1·78	2·18	1·45	1·90	1·93	2·36	1·75	1·74	2·15
June	2·38	1·96	2·49	1·71	1·70	1·53	2·24	1·96	2·47	2·12	2·01
July	2·08	1·16	1·50	1·08	1·79	0·96	2·16	1·17	1·94	1·75	2·20
August	3·81	2·77	3·94	2·40	3·35	2·06	3·97	2·68	4·06	3·75	2·42
September	2·44	2·46	2·71	2·12	2·72	2·04	2·62	2·33	3·30	2·30	3·11
October	4·01	3·01	3·31	2·35	2·84	1·89	3·50	2·75	4·09	3·10	4·83
November	3·66	3·88	3·33	3·25	3·10	3·46	3·42	3·61	4·10	3·22	4·40
December	3·91	4·92	4·10	4·34	3·13	3·81	3·34	4·50	4·33	3·47	4·15
1st three months ..	6·13	8·64	6·00	7·85	4·91	7·19	5·75	7·64	6·10	5·07	8·90
2nd ,, ..	7·14	7·31	7·85	6·62	6·75	6·12	7·90	7·53	8·57	7·38	6·51
3rd ,, ..	8·33	6·39	8·15	5·60	6·45	5 06	8·75	6·18	9·30	7·78	7·73
4th ,, ..	11·58	11·81	10·74	9·94	8·07	9·16	10·26	10·86	12·61	9·81	13·38
The Year	33·98	34·15	32·74	30·01	28·50	27·53	32·66	32·21	36·58	30·04	36·52

Before proceeding to discuss previous years and their influence on the subterranean water stocks, I wish to draw attention to the distribution of rain during the year, both as regards the averages and the results for 1902.

Out of the average yearly rainfall of 36·52 inches, 22·28 inches fall in the months October to March inclusive. It is these winter falls that are important because the natural evaporation carries away from the surface of the soil, from April to September inclusive, a greater quantity than falls. Now in recent years we have had a series of dry years, during which the winter falls have been much diminished, so much so in fact, that the average of the winter falls has been reduced from 22·92 inches to 22·28 inches. The table will show the detail.

TABLE V.

WET AND DRY YEARS AND WINTER FALLS

For the last 20 Years, showing their influence on the Averages.

Years.	Quantity—Inches.		Compared with the 40 Years' Averages.		Averages corrected each 5 Year Period.	Winter Falls. October to March inclusive.	
	Wet.	Dry.	Above.	Below.		Actual.	Average Falls corrected every 5 years.
1883	38·00	..	0·22	..	37·78	31·36	22 92
1884	..	36·41	..	1·37	..	21·27	..
1885	..	34·63	..	3·15	..	22·86	..
1886	44·76	..	6·98	..	..	21·14	..
1887	..	28·74	..	9·04	..	25·17	..
1888	..	37 00	..	0·10	37·10	24 04	22·86
1889	..	33 26	..	3·84	..	20·98	..
1890	..	34·14	..	2·96	..	18·68	..
1891	38·09	..	0·99	..	..	16·30	..
1892	..	31·75	..	5·35	..	22·93	..
1893	..	30·99	..	5·39	36·28	21·34	22·66
1894	40·38	..	4·10	..	..	17·71	..
1895	37·74	..	1·46	..	..	23·29	..
1896	..	32·97	..	3·31	..	25·39	..
1897	38·47	..	2·19	..	..	13·32	..
1898	..	34·36	..	2·42	36·78	24·75	22·42
1899	..	34·34	..	2·44	..	24·79	..
1900	37·90	..	1·12	..	..	21·34	..
1901	..	27·97	..	8·81	..	15·43	..
1902	..	33·98	..	2·80	..	13·83	..
	7	13	17·06	50·98	36·52		22·28

It will be worthy of notice that the two winters 1900-1901 and 1901-1902 were, with the single exception of 1896-1897, the two giving the least rainfall, for these years gave 15·43 and 13·83 against an average of 22·42, reducing that average to 22·28. Now, inasmuch as the winter rains only (as will be seen when evaporation is discussed) add to the underground water, this falling off of 15½ inches is practically the cause of our partial water famine.

Evaporation is unimportant in winter, but in summer it not only carries away the whole rainfall, but draws largely on the underground stocks. I have prepared a table which will show the loss by evaporation and from surface drainage.

TABLE VI.

INFLUENCE OF EVAPORATION AND SURFACE DRAINAGE ON THE PERCENTAGE OF EFFECTIVE RAINFALL.

Factors—Annual Rainfall, 36·52. Area, 24 sq miles. 1 in. = 22,688 gallons per acre.

Months.	Rainfall.		Evaporation.		Surface Drainage.		Loss. Evaporation and Drainage.		Effective Rainfall.	
	Average Monthly Totals.	Equivalent in millions of gallons.	Allowance In inches.	In millions of galls.	Allowance In inches.	In mills. of galls.	% of Falls.	In inches	% of Falls.	In inches.
January	3·81	1,318	0·41	141	0·38	140	20	0·79	80	3·02
February ..	2·62	900	0·22	72	0·26	95	18	0·48	82	2·14
March	2 47	858	1·07	368	0.24	90	52	1·31	48	1·16
April	2·35	816	1·95	672	0·23	87	92	2·18	8	0·17
May.....	2·15	740	3·85	1,327	0·22	83	190	4·07	..	..
June	2·01	7.0	4·11	1,418	0·20	75	213	4·31	..	..
July	2·20	720	3·10	1,078	0·22	82	151	3·32	..	..
August	2·42	795	2·83	975	0·24	88	126	3·06	..	..
September ..	3·11	1,070	1·71	590	0·30	110	65	2·01	35	1·01
October	4·83	1,652	0·83	286	0·49	180	27	1·32	73	3·51
November ..	4·40	1,515	0·50	172	0·44	160	21	0·94	79	3·46
December ..	4·15	1,460	0·15	51	0·41	150	13	0·56	87	3·59
The Year..	36·52	12,544	20·72	7,150	3·63	1340	66	24·35	34	18·06

In this table we see that out of the 36·52 inches of rain which falls annually, practically 21 inches go off again into the air. This quantity is spread out very unequally during the year, the smallest amount evaporated being in December, when 0·15 inch only out of 4·15 inches is lost. On the other hand, in June, when the rainfall is 2 inches, over 4 inches are evaporated. Besides the evaporation we have to allow for the surface drainage and other waste. From the figures obtained

by one of the States Engineers I have been able to make an approximate estimate of this loss, which will be found in detail in the table, but I may point out that the total loss from these two causes is not less than 66 per cent. of the total rainfall. After making these allowances, we find that the effective rainfall amounts to 18 inches, of which about 16 inches belong to the months I have looked upon as "effective."

These figures reduced to gallons give as the annual rainfall 12,544 millions of gallons, subject to a loss of 7,150 millions, giving an effective rainfall of 5,394 millions of gallons.

The last two winters, that is those ending March, 1901 and 1902, gave 15·43 and 13·83 inches instead of nearly 23 inches each year—say 15½ inches shortage for the two winters. This represents 5,200 millions of gallons. If we take the shortage of the last 20 years it works out at 7,000 millions of gallons, out of which the last two years have contributed 5,200 millions. It is therefore evident that the wells which, however deep they may be, are still surface wells, must feel the effects of the shortage.

WET DAYS.

Hauteville	199	Grange	191
Les Blanches	196	Claire Mare	171
L'Ancresse	185		

DROUGHT.

Claire Mare ..... 14 days ..... Jan. 9th-24th.

FALLS OF ONE INCH AND OVER.

Hauteville	Aug. 18th.....	1·03 inch.
Claire Mare.....	April 26th	1.11 „
Les Blanches	July 19th.....	1·02 „

THE FLORA OF THE ISLAND OF BRECHOU.

BY CECIL P. HURST.

BRECHOU, Brecqhou, or Île des Marchands is an island lying off the centre of the western coast of Sark, from which it is separated by the dangerous channel called the Gouliot Passage. This narrow strait is 70 yards wide and 50 feet deep at high water. The name Brechou is supposed to be derived from the Gothic, *brican*, the breach, passage, or gap that the sea has broken through, and *ou*, an island, like Jethou, Lihou, Burhou, &c. In shape, Brechou is an irregular oval, the long axis lying about due east and west. The physical features of the island resemble, in the main, those of Sark, and consist of a flattish land surface placed at an elevation of about one hundred to two hundred feet above the sea, and surrounded on every side by cliffs of varying height. This land surface rises towards the east, where it culminates in the lofty and precipitous Pointe Belême, and slopes gradually westwards. In a sheltered depression towards the north is built the farmhouse, the only dwelling on the island. There are no streams, but near the farm is an ancient well of delicious water, and there is a fresh water pool, probably fed by a spring, in one portion of the northern cliffs. This pool is nearly choked with the one aquatic plant found on the island—*Callitriche stagnalis*,—and its sides are beautifully draped by luxuriant specimens of the Lady Fern.

Brechou is three quarters of a mile long from east to west, and 360 yards wide. The elevated interior contains about one hundred acres, sixty of which are under cultivation, the crops chiefly consisting of wheat, barley, oats, parsnips, beans and beet.

There are two or three rough pastures on the island, the rest of the uncultivated land being covered by the abundant heath (*Erica cinerea*), or occupied by a rough tangle of furze, bracken, and bramble. No trees grow here; the taller shrubs are represented by a few bushes of the Sallow willow, which have probably been planted, and a few plants of Tamarisk near the

farm, an obvious introduction. The absence of hedges at first sight strikes one as curious. Brechou was formerly kept as a rabbit warren, but rabbits have much decreased in numbers.

The coast is extremely rocky and jagged. The cliffs on the east and south are high and nearly perpendicular; those on the west and north are lower and more sloping. There is no sand on any portion of the coast, and shingle is very rare, so that sand-loving species are quite absent from its flora. There is a little harbour on the west coast, with a good road leading from it to the farm; and the island is accessible at two or three other (more or less difficult) landing places, the one most favoured, because of easiest access from the mainland of Sark, being at the extremity of a rocky promontory on the south coast. There is a large cavern in the south of the island which tradition says was once inhabited by pirates. A ladder, used as a landing place on the north coast, is known by the curious name of "Le Galé de Jacob," or Jacob's Ladder.

From the summit of the lofty Pointe Belême a magnificent view is obtained of the western coast of Sark, and this when lighted up by the rays of the setting sun presents a glorious picture. Brechou, set in deep blue seas, and with charming panoramas of rocky coasts and sea-girt isles, is an ideal summer paradise for the artist and lover of nature, and forms a favourite picnic ground for visitors from Sark. The island is said to have derived its name, l'Ile des Marchands, from being at one time in possession of a family bearing the name Le Marchant, who in consequence of a lawsuit were obliged to relinquish possession in favour of the Seigneur of Sark; and it is amusing to notice that after this event the Seigneurs of Sark took special care to describe themselves as "Lords of Sark and its dependencies," the dependencies being Little Sark, Brechou, Le Tas, etc. Brechou is almost in the happy position of being an island without a history, few events having occurred to disturb the equanimity of this sequestered little spot. Perhaps the most important was the wreck, near the rock called La Neste, off the west coast, of the East Indiaman "Valentine" in the autumn of 1781. The vessel became a total wreck, but fortunately no lives were lost, the crew managing to reach the island, which at that time was uninhabited. Brechou is the property of the Seigneur of Sark, and was leased at the time of my visit to Mr. Best, a Guernseyman. The farm contained four tenants: three men working on the land, and an artist who was very successfully engaged in transferring the beauties of nature to his canvas. A bull and a mare completed the population of the island. Although

inhabited so long ago as 1836, the difficulty and uncertainty of access has led to its occasional abandonment, and in 1860 Brechou seems to have been deserted. There is a tradition that a frigate once passed through the Gouliot Passage, and a trip through this picturesque little strait often forms an interesting item in marine excursions from Guernsey and Sark.

Kestrels are frequently seen; sparrow-hawks are not uncommon; and the loud pipe of the oyster-catcher is a familiar sound. Although not concerned with matters entomological, I may mention that when on the island I captured two Cream Spot Tiger Moths (*Arctia villica*) and two or three specimens of the Rose Chafer (*Cetonia aurata*), that beautiful beetle which, though so prominent a feature of the Sark insect fauna, has not yet been discovered in Guernsey.

The insects, marine zoology, lichens, mosses, fungi, and seaweeds of the island are all rich and untouched fields of exploration, and should tempt the zealous naturalist, for nearly everything found would be a *first record.*

Seven lichens from Brechou are recorded in Mr. Marquand's "Flora of Guernsey and the Lesser Channel Islands." With this exception nothing was known of the vegetation of the island, not even a single Flowering Plant being recorded. It was this that induced me in the summer of 1902 to pay it a number of visits, the following list being the result of my investigations. My visits were made on the 11th, 14th, 17th, and 30th July, and the 22nd, 26th, and 28th August. As the summer of 1902 was late and cool, I was fortunate enough to find some of the spring plants in flower; and other early species, though not in flower, were still *en evidence*, e.g., *Romulea Columnæ*; so that the Flora I have drawn up probably gives a very fair idea of the island vegetation, and I do not think many flowering plants and ferns remain to be added to the list. What plants still remain unrecorded should be looked for, of course, in the spring.

As Brechou is merely a detached portion of Sark, one would expect the flora to resemble very closely that of the neighbouring island, and this we find to be the case, only two of the native Brechou species being unrecorded for Sark. These are the Bush Vetch (*Vicia sepium*) which is not uncommon in places on the north coast, and the Adder's Tongue Fern (*Ophioglossum vulgatum*) which occurs as the very rare variety *ambiguum*, near the pool on the north coast. It grows here very sparingly and is the chief rarity of the island.

Stellaria graminea, Malva moschata, Lavatera arborea, Vicia tetrasperma, Trifolium suffocatum, Potentilla Tormen-

tilla var. *procumbens*, *Hypochæris glabra*, and *Bromus diandrus* var. *rigidus* are interesting native plants. The abundance of *Lotus hispidus* and *Polycarpon tetraphyllum* and the occurrence of *Lotus angustissimus* and *Trichonema Columnæ* proclaim the Channel Island affinities of the flora. The absence of the Dandelion is curious; and the rarity of the Daisy is also a noticeable feature of the vegetation. Brechou is remarkably rich in ferns, possessing three more than the much larger Island of Herm, and only falling short of Sark by three species. The shady north coast, with its high rocky buttresses containing innumerable chinks, crevices, and shady nooks is peculiarly favourable to the growth of these plants.

The cultivation of the ground for a long period has led to many introductions. The alien flora of Brechou amounts to 43 species, forming about 21 per cent. of the total vegetation, and consists of 26 colonists, 9 aliens, and 8 casuals. One colonist (*Fagopyrum esculentum*), and 5 aliens (*Brassica campestris* var. *Napus*, *Phalaris canariensis*, *Agrostis canina*, *Lepidium ruderale*, and *Melilotus parviflora*) are unrecorded for Sark, probably owing to the bulk of the seed grain being of Guernsey origin, but one of the aliens (*Cuscuta trifolii*) has not yet been detected in the latter island.

With the exception of the extreme west, where the ground slightly sinks towards the sea, there is no gradation whatever in Brechou between high rocky coast and slightly undulating table-land: there is no low ground, nor even ground that could be called sloping, and I think this uniformity of physical feature and soil reacts on the flora, causing it to be less rich and varied than one would expect. Thus, notwithstanding the greater area and large number of introduced plants in Brechou, we find its phanerogamous flora to exceed that of Jethou by only seven species. Fifty-seven plants found on Jethou are absent from Brechou, and the distribution of the species common to Jethou and Brechou is so exceedingly different in the two islands that we can only conclude that if they were ever united, separation must have taken place at a period geologically remote. On the other hand, the close similarity in identity and distribution between the floras of Brechou and Sark makes it certain that at a very recent geological period, possibly even within historic times, the islands were one.

The flora of Brechou as recorded in the following pages consists of 190 Flowering Plants, 9 Ferns, 2 Mosses, and 4 Fungi. The order and nomenclature of Mr. Marquand's "Flora of Guernsey and the Lesser Channel Islands" have been followed throughout.

RANUNCULACEÆ.

Ranunculus Ficaria, *L.* Pilewort.—Lesser Celandine. Native. Rare. On the northern cliffs Favoured by the late season and a sheltered rock cleft this spring flower was in bloom on the 11th July.

R. repens, *L.* Creeping Buttercup.—Native. Rare. On the north coast near the pool Rather local inland.

FUMARIACEÆ.

Fumaria Boræi, *Jord.* Boreau's Fumitory.—Colonist. Rare. On cultivated ground.

CRUCIFERÆ.

Cardamine hirsuta, *L.* Hairy Bitter Cress.—Native. Rare. On the north east coast.

Sisymbrium officinale, *Scop.* Hedge Mustard.—Native. Not unfrequent.

Brassica campestris, *L.* Var. *Napus,* L. Field Cabbage. Casual. Very rare. Several plants on cultivated ground near the farm.

Sinapis arvensis, *L.* Charlock.—Casual. Very rare. A few plants near the farm.

Cochlearia danica, *L.* Danish Scurvy Grass.—Native. Not uncommon along the northern coast, growing especially in rock chinks. Very rare on the southern coast.

Lepidium Smithii, *Hook.* Smooth Field Pepperwort.—Native. Rare. Plentiful in one place near the farm; also grows in a field near the northern cliffs.

L. ruderale, *L* Narrow-leaved Pepperwort.—Casual. Very rare. A few plants near the farm.

Capsella Bursa-pastoris, *DC.* Shepherd's Purse.—Colonist Rare. Near the farm.

Senebiera Coronopus, *Poir.* Common Wart Cress.—Alien. Not common. Near the farm and at the well.

Raphanus maritimus, *Sm.* Sea Radish.—Colonist. A not unfrequent weed on cultivated ground.

VIOLACEÆ.

Viola Riviniana, *Reich.* Dog Violet.—Native. On the cliffs: rather common.

POLYGALACEÆ.

Polygala vulgaris, *L.* Milkwort.—Native. Rare. Near the farm, with blue flowers. Var. *Oxyptera,* Reichb. Near the north coast. The same untypical form that grows in Guernsey and Sark, with flesh-coloured flowers and capsules as long as, but broader than the wings.

CARYOPHYLLACEÆ.

Silene anglica, *L.* English Catchfly.—Colonist. Plentiful on cultivated ground.

S. maritima, *With.* Sea Campion.—Native. Plentiful on the cliffs.

Lychnis diurna, *Sibth.* Red Campion.—Native. On the cliffs. Fairly frequent.

Lychnis Githago, *Scop.* Corn Cockle.—Colonist. Very rare. Near the farm.

Sagina procumbens, *L.* Procumbent Pearlwort.—Native. Not unfrequent on the north coast, and also near the harbour.

S. apetala, *L.* Small-flowered Pearlwort.—Native. Not common. North coast.

Sagina maritima, *Don.* Sea Pearlwort.—Native. Locally plentiful on the cliffs.

Stellaria media, *Vill.* Chickweed.—Very rare. A rather doubtful native. Var. *Boræana*, Jord. Rare, but slightly more common than the type. In a parsnip field near the south coast. Also near the north coast, and in four localities near the farm.

S. graminea, *L.* Lesser Stitchwort.—Native. Sparingly, growing among brambles along a field border near the north-east coast. This very rare Lesser Channel Island plant is recorded for Sark by Dr. Bull only, on the authority of the Rev. J. J. Muir, whose station has apparently been lost. I have not seen it in Sark.

Cerastium triviale, *Link.* Narrow-leaved Mouse-ear Chickweed.—Native. Not common. On the northern cliffs, inland, and also on the cliffs enclosing the harbour.

C. tetrandrum, *Curt.* Four-cleft Mouse-ear Chickweed.—Native. Locally plentiful on the cliffs.

Mœnchia erecta, *Sm.* Upright Chickweed.—Native. Not very uncommon on the cliffs.

Polycarpon tetraphyllum, *L.* Four-leaved Allseed.—Native. Very common. Abundant on the cliffs. This very rare English plant is as common in Brechou as in Sark and the other Channel Islands.

Lepigonum rubrum, *Fr.* Field Sandwort-Spurrey.—Native. Not uncommon. On the coast, and also on cultivated ground.

L. rupestre, *Kindb.* Rock Sandwort-Spurrey —Native. Very common on the cliffs.

Spergula arvensis, *L.* Corn Spurrey.—Colonist. Abundant on cultivated ground.

Scleranthus annuus, *L.* Knawel.—Colonist. Very common on cultivated ground.

MALVACEÆ.

Malva moschata, *L.* Musk Mallow.—Native. A few plants in three inland localities. This pretty plant seems to have been very common in Sark when Professor Babington visited that Island more than sixty years ago. It is very rare and local there now.

Lavatera arborea, *L.* Tree Mallow.—Native. Very rare. In precipitous situations on the southern coast, whence it has probably been brought and planted near the farm.

HYPERICACEÆ.

Hypericum humifusum, *L.* Trailing St. John's Wort.—Native. Local. On the cliffs. Also inland.

Hypericum pulchrum, *L.* Small Upright St. John's Wort.—Native. Not unfrequent. On the cliffs. Rather plentifully in a pasture near the farm.

GERANIACEÆ.

Geranium molle, *L.* Soft Cranesbill.—Native. Rare. Near the farm, and near the north coast. Along a ridge running westwards from the farm. On the cliffs enclosing the harbour.

G. dissectum, *L.* Cut-leaved Cranesbill.—Native. Very rare. Near the farm, near the northern cliffs, and in a cornfield on the north coast.

Erodium cicutarium, *Sm.* Common Storksbill.—Native. Rather common. Here and there on the cliffs, as on the coast near the harbour.

E. maritimum, *L'Her.* Sea Storksbill.—Native. Very rare. Very sparingly on the coast opposite the rock called La Givaude.

LINACEÆ.

Radiola millegrana, *Sm.* Allseed.—Native. Very rare. In one place on the northern coast near the pool.

LEGUMINOSÆ.

Ulex europæus, *L.* Common Furze or Gorse.—Native. Rather common.

Sarothamnus scoparius, *Koch.* Broom.—Native. Rare. On the southern cliffs. One locality inland.

Melilotus parviflora, *Desf.* Small-flowered Melilot.—Casual. Very rare. Two or three plants at the farm. This casual plant is unrecorded from Sark.

Trifolium pratense, *L.* Purple Clover.—Native. Field near the farm On the north cliffs.

T. arvense, *L.* Hare's Foot Trefoil.—Native. Common on the cliffs. Especially plentiful on the south coast, where it is quite a characteristic plant.

T. suffocatum, *L.* Dense-flowered Trefoil.—Native. Very rare. Sparingly on the western coast opposite the rock called La Givaude. One of the rarities of the Brechouan Flora.

T. repens, *L.* White Clover.—Native. Fairly common. Inland, and on the cliffs.

T. procumbens, *L.* Hop Trefoil.—Native. Common. North cliffs.

T. minus, *Sm.* Lesser Yellow Trefoil.- Native. Common. As in Sark, the genus Medicago seems to be unrepresented. The absence from both islands of the usually common *Medicago lupulina*, L., is very curious.

Lotus corniculatus, *L.* Common Bird's-foot Trefoil.—Native. Common. Var. *crassifolius*, Pers., occurs on the west coast.

L. major, *Scop.* Marsh Bird's-foot Trefoil.—Native. Not common. Inland. Rather plentiful in damp places on the north coast.

L. angustissimus, *L.* Long-podded Bird's-foot Trefoil.—Native Rare. Plentiful in a furze-brake east of the landing-place on the south coast. Also on the west side of this landing-place. Cliffs near the harbour. One inland locality.

L. hispidus, *Desf.* Short-podded Bird's-foot Trefoil.—Native. Common on the cliffs and inland.

Vicia hirsuta, *Koch.* Hairy Tare.—Native. Common.

V. tetrasperma, *Mœnch.* Slender Tare.—Native. Rare. Southern cliffs. Northern cliffs, with *Vicia hirsuta*. One inland locality. North-east cliffs.

V. Cracca, *L* Tufted Vetch.—Native. Local. Near the farm.

V. sepium, *L.* Bush Vetch.—Native. Not uncommon on the northern cliffs, but not elsewhere. Unrecorded for Sark.

V. angustifolia, *Roth.* Common Wild Vetch.—Native. Very common.

Ornithopus perpusillus, *L.* Common Bird's-foot.—Native. Rather frequent on the cliffs. Also occurs inland.

ROSACEÆ.

Prunus spinosa, *L*, Blackthorn. Sloe.—Native. Plentiful on the cliffs.

Potentilla tormentilla, *Nes'.* Tormentil.—Native. Along the north coast, but not common. Var. *Procumbens*, Sibth. Rather plentiful on the north coast.

Rubus corylifolius, *L.* (teste E. F. Linton). Bramble.—Native Abundant. More species or sub-species of this difficult genus will probably be found on the island.

Rosa canina, *L.* Dog Rose.—Native. Not common. Occurs sparingly as the var. *Dumalis*, Bechst., along the northern cliffs. The plants are very dwarf. There are a few bushes inland.

TAMARISCACEÆ.

Tamarix anglica, *Webb.* Tamarisk.—Alien Planted near the farm.

CRASSULACEÆ.

Sedum anglicum, *Huds.* English Stonecrop.—Native. Abundant on the cliffs.

Cotyledon umbilicus, *L.* Wall Pennywort.—Native. Very common.

UMBELLIFERÆ.

Crithmum maritimum, *L.* Samphire.—Native. Very common on the cliffs.

Heracleum Sphondylium, *L.* Hogweed.—Native. Not uncommon

Daucus Carota, *L.* Wild Carrot.—As the var. *gummifer*, Lam. Abundant on the cliffs. Native.

ARALIACEÆ.

Hedera helix, *L.* Ivy.—Native. Common on the cliffs.

CAPRIFOLIACEÆ.

Sambucus nigra, *L.* Common Elder.—Alien. Very rare. Near the farm.

Lonicera Periclymenum, *L.* Honeysuckle.—Native. Common inland and on the cliffs.

RUBIACEÆ.

Sherardia arvensis, *L.* Field Madder.—Colonist. Common on cultivated ground.

Galium Aparine, *L.* Goose-grass Cleavers.—Native. Not common.

G. verum, *L.* Yellow Bedstraw.—Native. Fairly frequent on parts of the cliffs and also inland.

DIPSACEÆ.

Dipsacus sylvestris, *L.* Wild Teasel.—Native. Rare. One small patch on the north coast. Scattered plants in other parts of the Island.

COMPOSITÆ.

Bellis perennis, *L.* Daisy.—Native. Not common. Above the north-east coast and also near the farm.

Inula crithmoides, *L.* Golden Samphire.—Native. Rare. Various parts of the south coast growing low down and difficult to reach. Also occurs on the extreme east of the island

Pulicaria dysenterica, *Gaert.* Great Fleabane.—Native Rare. Near the pool on the north coast and also near the farm.

Filago germanica, *L.* Common Cudweed.—Native. Common inland and on the cliffs.

F. minima, *Fr.* Slender Cudweed.—Native. Rare. Two places on the cliffs. The south-west coast.

Gnaphalium uliginosum, *L.* Marsh Cudweed.—Colonist. Rare. On cultivated ground near the farm, sparingly.

Achillea millefolium, *L.* Yarrow —Native. Not uncommon. Along field borders on the north-east coast.

Anthemis nobilis, *L.* Common Chamomile.—Native Very rare. Sparingly along a field border above the north-east coast. Although so common on the opposite Sark coast, in Brechou this beautiful species seems to be dying out, and will possibly soon become extinct.

Matricaria inodora, *L.* Scentless Mayweed.—Native. Common on cultivated ground and on the coast, especially on the southern cliffs where it forms a characteristic feature of the vegetation.

Chrysanthemum Leucanthemum, *L.* Oxeye Daisy.—Native. Very rare. In one place inland near the south coast.

C. segetum, *L.* Corn Marigold.—Colonist. Too common in cultivated ground

Senecio vulgaris, *L.* Common Groundsel.—Colonist. Very rare. Rather plentiful in a parsnip field near the south coast.

S. sylvaticus, *L.* Mountain Groundsel.—Native. Rather rare.

S. Jacobæa, *L.* Common Ragwort.—Native. Common.

Centaurea nigra, *L.* Black Knapweed.—Native. Rare. A few plants near the farm belonging to the type. One plant with rayed flowers in the centre of the island.

Carduus tenuiflorus, *Curt.* Slender-flowered Thistle.—Native. Rather rare.

C. lanceolatus, *L.* Spear Thistle.—Native. Not very common. On the cliffs near the harbour.

C. arvensis, *Curt.* Creeping-rooted Thistle.—Native. Not common. In an oatfield near the north-east coast. Also in a field near the farm.

C. palustris, *L.* Marsh Thistle.—Native. Rare. Rather plentiful round the pool on the north coast. Also on other parts of the north coast.

Hypochœris glabra, *L.* Smooth Cat's Ear.—Native. Not common Rather frequent on the western cliffs. Near the harbour.

H. radicata, *L.* Long-rooted Cat's Ear.—Native. Very common.

Thrincia hirta, *DC.* Hairy Hawkbit.—Native. On the cliffs. Rather common.

Sonchus oleraceus, *L.* Common Sow-thistle.—Native. Not uncommon.

S. asper, *Hoffm.* Rough Sow-thistle.—Native. Very fine and well-marked plants. Northern cliffs and elsewhere.

S. arvensis, *L.* Corn Sow-thistle.—Native. Rare. Barley field near farm. Also near the south coast.

Crepis virens, *L.* Smooth Hawksbeard.—Native. Very common inland and on the cliffs.

Hieracium Pilosella, *L.* Mouse-ear Hawkweed.—Native. Not common.

CAMPANULACEÆ.

Jasione montana, *L.* Sheep's-bit.—Native. Abundant.

ERICACEÆ.

Calluna vulgaris, *Salisb.* Heather.—Native. Plentifully along the northern cliffs. Sparingly on the southern coast.

Erica cinerea, *L.* Fine-leaved Heath.—Native. Frequent.

OLEACEÆ.

Ligustrum vulgare, *L.* Privet.—Native. Southern and south-western cliffs. Also on the north-eastern coast. Plentiful on cliffs enclosing the harbour.

GENTIANACEÆ.

Erythraea Centaurium, *Pers.* Common Centaury.—Native. Not unfrequent. With pure white flowers, near the farm.

CONVOLVULACEÆ.

Convolvulus arvensis, *L.* Small Bindweed. Colonist. Rare. On cultivated ground near the farm.

Cuscuta trifolii, *Bab.* Clover Dodder —Alien. Very rare. Not far from the farm, growing on low herbage. Also in another locality in the east of the island. Not recorded from Guernsey.

BORAGINACEÆ.

Myosotis collina, *Hoffm.* Dwarf Forget-me-not —Native. Rare. On the northern coast. Owing to the late season and cool summer of 1902, this plant was still in flower on the 30th July.

SOLANACEÆ.

Solanum nigrum, *L.* Black Nightshade.—Colonist. Rare. On cultivated ground near the farm.

S. dulcamara, *L.* Woody Nightshade.—Native. Generally diffused along the northern coast. Western cliffs. Also in the extreme east of the island.

OROBANCHACEÆ.

Orobanche amethystea, *Thuil.* Bluish Broomrape.—A few plants on the southern coast. One plant near the farm. The flowers were faded, but the plant probably belonged to the species to which I assign it, for *Daucus carota,* L., var. *gummifer,* Lam., was the host.

SCROPHULARIACEÆ.

Digitalis purpurea, *L.* Foxglove.—Native. Fairly plentiful along the northern coast.

Antirrhinum orontium, *L.* Corn Snapdragon.—Colonist. Not uncommon on cultivated ground.

Linaria Elatine, *Mill.* Sharp-leaved Toadflax.—Colonist. Rather rare.

Euphrasia officinalis, *L.* Eyebright.—Native Locally plentiful. I did not go into the forms of this species. Possibly some of the segregates occur.

Veronica Chamœdrys, *L.* Germander Speedwell.—Native. Rare. Near the northern cliffs. Field near the farm.

V. Buxbaumii, *Ten.* Buxbaum's Speedwell.—Colonist. Rare. Plentiful in a cultivated field near the farm. Also occurred in a barley field.

LABIATÆ.

Thymus Serpyllum, *L.* Wild Thyme.—Native. Not uncommon. Plentiful on the cliffs.

Prunella vulgaris, *L* Self-heal.—Native. Inland and on the coast. With large yellowish white flowers near the farm.

Nepeta Glechoma, *Benth.* Ground Ivy.—Native. On the cliffs.

Lamium purpureum, *L.* Red Dead-nettle.—Colonist. Rare. Rather plentiful in a cultivated field, near the farm.

Stachys arvensis, *L.* Corn Woundwort.—Colonist. Not common.

Teucrium Scorodonia, *L.* Wood Sage.—Native. Very common.

PRIMULACEÆ.

Anagallis arvensis, *L.* Scarlet Pimpernel.—Native. Common, especially on the cliffs.

Samolus Valerandi, *L.* Brookweed.—Native. Rare. Not uncommon in damp places along the northern coast at the base of the cliffs. Sparingly near the harbour.

PLUMBAGINACEÆ.

Armeria maritima, *Willd.* Thrift.—Native. Very common all round the coast.

PLANTAGINACEÆ.

Plantago coronopus, *L.* Buck's-horn Plantain.—Native. Very common. Abundant on the cliffs.

P. maritima, *L.* Sea Plantain.—Native. Rare. Plentifully on the south coast. Also on the extreme eastern cliffs.

P. lanceolata, *L.* Ribwort Plantain —Native. Rather frequent. On the cliffs and inland.

P. major, *L.* Great Plantain.—Native. Rare. North coast. A few plants near the farm.

CHENOPODIACEÆ.

Chenopodium album, *L* White Goosefoot.—Colonist. Rather plentiful. Also as the var. *viride*, L.

C. murale, *L.* Nettle-leaved Goosefoot.—Alien. Rare. Rubbish heaps near the farm.

Beta maritima, *L.* Sea Beet.—Native. Rare Plentiful in several places on the southern coast, and on the extreme eastern cliffs. A few plants on the north-eastern coast.

Atriplex patula, *L.* Narrow-leaved Orache.—Colonist. As the var. *angustifolia*, Sm., this occurs rarely in cultivated fields in the island.

A. deltoidea, *Bab.* Triangular-leaved Orache.—Native. More or less plentiful all round the coast.

POLYGONACEÆ.

Rumex pulcher, *L.* Fiddle Dock.—Alien. Rare. Fairly plentiful inland near the farm.

R. obtusifolius, *L.* Broad-leaved Dock.—Native. Rare. Near the farm.

R. crispus, *L.* Curled Dock.—Native. Rare. Near the farm. Also rocks below Pointe Belême.

R. Acetosa, *L.* Common Sorrel.—Native. Common.

R. Acetosella, *L.* Sheep's Sorrel.—Native. Abundant on cultivated ground and on the cliffs.

Polygonum aviculare, *L.* Common Knotgrass.—Native. Plentiful near the well.

P. Convolvulus, *L.* Climbing Bistort.—Colonist.

Fagopyrum esculentum, *Mœnch.* Buckwheat.—Colonist. A few plants on cultivated ground. Not recorded for Sark.

EUPHORBIACEÆ.

Euphorbia Helioscopia, *L.* Sun Spurge.—Colonist. Very rare. Cultivated ground near the farm.

E. portlandica, *L.* Portland Spurge.—Native. Very common on the cliffs.

Mercurialis annua, *L.* Annual Dog's Mercury.—Colonist. One plant on cultivated ground.

CALLITRICHACEÆ.

Callitriche stagnalis, *Scop.* Large-fruited Water Starwort.—Native. Fills the pool on the north coast; its only locality.

URTICACEÆ.

Urtica dioica, *L.* Common Nettle.—Native. At the farm and on the cliffs.

AMENTIFERÆ.

Salix cinerea, *L.* Common Sallow.—Alien. Very rare. To the north of the farm near the sea; probably planted.

ORCHIDACEÆ.

Spiranthes autumnalis, *Rich.* Autumnal Lady's Tresses.—Native. Very rare. Plentifully on a piece of rough ground immediately to the east of the cultivated field lying between the farm and the north coast.

IRIDACEÆ.

Iris fœtidissima, *L.* Stinking Iris.—Native. Very rare. In a furze-brake to the east of the landing place on the south coast In another place on the southern cliffs.

Romulea Columnæ, *Seb. & Maur.* Native. Rare. One locality on the southern cliffs.

LILIACEÆ.

Scilla autumnalis, *L.* Autumnal Squill.—Native. Rather rare. On the southern coast, and also in the extreme east of the island.

Endymion nutans, *Dum.* Wild Hyacinth.—Native. Common on the cliffs. Also occurs inland.

JUNCACEÆ.

Juncus conglomeratus, *L.* Common Rush.—Native. Very rare. At the pool on the north coast.

J. bufonius, *L.* Toad Rush.—Colonist. Invariably grows on cultivated ground; common in this habitat. In Sark and Brechou this plant affects the driest cornfields.

Luzula multiflora, *Lej.* Many-headed Wood Rush.—Native. Rare. Near the farm and on the north coast, growing in bramble brakes.

NAIADACEÆ.

Zostera marina, *L.* Grasswrack.—Casual. Occasionally seen thrown up on the coast, when it has always been drifted over from Sark, the rocky coast of Brechou being incapable of producing this sand-loving species.

CYPERACEÆ.

Scirpus setaceus, *L.* Bristle-stalked Club Rush.—Native. Very rare. Very sparingly at the bottom of a gully on the north coast. Very sparingly near the harbour. This plant, on the coast, often grows in the company of *Samolus Valerandi*, L.

Carex præcox, *Jacq.* Vernal Sedge.—Native. Very rare. On the north coast in one place.

C. muricata, *L.* Great Prickly Sedge.—Native. Rare. Furze-brake to the east of the landing place on the south coast, in fair plenty. Along the western cliffs in different places. Also near the farm.

GRAMINEÆ.

Phalaris canariensis, *L.* Canary Grass.—Casual. Two or three plants near the farm. Unrecorded for Sark.

Anthoxanthum odoratum, *L.* Sweet-scented Grass.—Native. Rare. On the western cliffs.

Agrostis canina, *L.* Brown Bent Grass.—Casual. A stray plant or two in the farm yard.

A. vulgaris, *With.* Common Bent Grass.—Native. Abundant.

A. alba, *L.* Marsh Bent Grass.—Native. Not uncommon on the north coast. The var. *maritima*, Lam., also occurs.

Holcus lanatus, *L.* Meadow Soft Grass.—Native. Very common.

H. mollis, *L.* Creeping Soft Grass.—Native. Below rocks on the north coast opposite the farm, and eastwards along the coast plentifully.

Aira caryophyllea, *L.* Silvery Hair Grass.—Native. Abundant.

A. præcox, *L.* Early Hair Grass.—Native. Not nearly so common as the preceding. On the cliffs.

Avena sativa, *L.* The cultivated Oat occurs in a casual condition near the farm.

Arrhenatherum elatius, *M. & K.* False Oat Grass.—Alien. Very rare. On the top of a bank near the farm.

Triodia decumbens, *Beauv.* Heath Grass.—Native. Rare, apparently. On the north coast near the farm.

Poa annua, *L.* Annual Meadow Grass.—Native.

P. trivialis, *L.* Rough Meadow Grass.—Native. Rare. Near the farm and on the north coast.

Sclerochloa loliacea, *Woods.* Dwarf Meadow Grass.—Native. Locally plentiful on the cliffs.

Briza minor, *L.* Small Quaking Grass.—Colonist. Rare. In a cultivated field between the farm and the north coast.

Cynosurus cristatus, *L.* Crested Dog's-tail Grass.—Native. Rare. Above the north-east coast. On a cliff near the farm.

Dactylis glomerata, *L.* Cock's-foot Grass.—Native. Common.

Festuca sciuroides, *Roth.* Barren Fescue Grass.—Native. Fairly common. On the northern and western cliffs. Near the farm.

F. ovina, *L.* Sheep's Fescue Grass.—Native. The beautiful var. *glauca,* Lam., is plentiful on the cliffs.

Bromus madritensis, *L.* Upright Brome Grass.—Native. I found a few plants of the var. *rigidus,* Roth., in one place on the northern cliffs.

Serrafalcus mollis, *Parl.* Soft Brome Grass.—Native. Not common.

Brachypodium sylvaticum, *R. & S.* False Brome Grass.—Native. Common on the cliffs.

Hordeum murinum, *L.* Wall Barley.—Alien. Rather plentiful at the farm.

Lolium perenne, *L.* Rye Grass.—Native. At the farm and on the north coast.

FERNS.

Polypodium vulgare, *L.* Polypody.—Native. Plentiful and fine on the northern cliffs. Also occurs on the southern coast.

Lastrea Filix-mas, *Presl.* Male Fern.—Native. Rather common on the north-east coast. Also on the north-west coast.

Lastrea dilatata, *Presl.* Broad Shield Fern.—Native. Very rare. In one locality on the north-east coast.

Athyrium Filix-fœmina, *Roth.* Lady Fern.—Native. Rare. Luxuriant specimens grow around the pool on the north coast. Also occurs on the north-east coast.

Asplenium lanceolatum, *Huds.* Lanceolate Spleenwort.—Native. Not uncommon round the coast. Generally grows at a higher level than *Asplenium marinum,* L. There occurs here, as well as in Sark and Alderney, a curious form of *A. lanceolatum* growing in exposed rock chinks, which is worth further study. The pinnules are attenuated, and the lowest pair of pinnæ are broader than, or as broad as, any on the frond.

A. marinum, *L.* Sea Spleenwort.—Native. Rather plentiful round the coast. Sometimes very fine.

A. Adiantum-nigrum, *L.* Black Spleenwort.—Native. Not uncommon on the cliffs. Also occurs inland.

Pteris aquilina, *L.* Common Brake or Bracken.—Native. Very common, both inland and on the cliffs.

Ophioglossum vulgatum, *L.* Common Adder's Tongue.—Native. The type is not found on Brechou. The var. *ambiguum*, C. & G., occurs very sparingly on a grassy bank near the pool on the north coast. Mr. Marquand considers it identical with the L'Ancresse Common plant. It is the chief Brechou rarity. This form is very rare in the British Islands, but has a wide distribution, being found in Scilly, Wales, Donegal and Orkney.

MOSSES.

Polytrichum juniperinum, *Willd.* Common in bare places on the cliffs.

Brachythecium purum, *Dix.* (*Hypnum*, Braith.) Very common in damp shady places on the cliffs.

FUNGI.

Lepiota procera, *Scop.* Parasol Mushroom. Very fine specimens in a pasture near the farm.

Marasmius oreades, *Fr.* The Fairy Ring Mushroom. Near the farm.

Agaricus campestris, *Linn.* Common Mushroom.

A. arvensis, *Schaef.* The Horse Mushroom. Plentiful near the farm.

June 23, 1904

GUERNSEY

SOCIETY OF NATURAL SCIENCE

AND

LOCAL RESEARCH.

—*—

REPORT AND TRANSACTIONS

1903.

Guernsey:
BICHARD'S PRINTING AND PUBLISHING COMPANY, LTD.
BORDAGE STREET.

1904.

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TRANSACTIONS OF THE SOCIETY.

Monthly Meeting held on January 22nd, 1903, Mr. W. Sharp, Vice-President, in the chair.

Mr. G. Derrick exhibited and made remarks upon some pebbles, flints and fragments of local rock, which were found in the sand, above head and below clay, at the northern end of the upper pit of the Vrangue Brickfield.

Mr. E. Charles Ozanne, C.S.I., reported that the old monastery adjoining the Vale Church had been sold by Mr. Domaille to Canon Bell, Rector of the Vale, and as it might be pulled down before long, antiquarian members and all who were interested in old buildings should arrange to visit it without loss of time. Arrangements for a visit to this interesting and ancient structure were left in Mr. Ozanne's hands. Mr. Derrick suggested that the lobster hatcheries at Grand Havre might be inspected at the same time; but Mr. Hocart said there was nothing to be seen at this season. The plague of *Octopi* from which the fishing areas in this neighbourhood had suffered for two years had now passed away, and Mr. Ozanne thought this was probably owing to a return of abundant food in the waters previously frequented by these voracious creatures, just as a plague of rats occurred in certain districts in India some years, and then suddenly disappeared owing to the failure of the crops.

Mr. Cecil P. Hurst's paper on the Flora of the Island of Brechou (printed in the *Transactions* for 1902, p. 163) was read by Mr. Derrick.

Mr. A. Collenette then gave his annual *resumé* of the Rainfall and Sunshine in Guernsey for the past year, an exceedingly valuable contribution to our knowledge of the meteorology of this area. These papers (illustrated by elaborate tables and diagrams) could obviously not be compiled until the year was completed, but they are printed in the *Transactions* for 1902.

The Secretary announced that arrangements had been made by the Council for the delivery during the ensuing session of three short lectures on scientific subjects, the first of which, by the President, would be given at the following meeting of the Society.

Monthly Meeting held on February 18th, 1903, Dr. J. Aikman, President, in the chair.

An Extraordinary General Meeting had been convened for this date, for the purpose of deciding upon certain proposed alterations in the Rules of the Society. The new Rules, as altered, are printed in the *Transactions* for 1902, p. 105.

The following ladies and gentlemen were unanimously elected members of the Society :—

Dr. Henry Draper Bishop, M.D., M.R.C.S., L.R.C.P. ; Dr. H. P. D'Arcy Benson, M.D., C.M., F.R.C.S., Edin. ; Mrs. Aikman ; Miss Aikman ; Miss Edith Boys ; Mrs. E. C. Ozanne ; Mr. F. J. Fletcher ; Mr. G. Dalgliesh ; Mr. W. O. Voûte ; Miss E. L. Bailey ; Mr. V. D. Sluys ; Mr. Cecil P. Hurst ; Mr. W. H. Foote.

The first of a course of short scientific lectures was delivered by the President, Dr. J. Aikman, the subject being : " The Evolution of the Thermometric Scales."

The lecturer mentioned the first attempt to measure heat by the Italian physician Sanctorio about the year 1590. Twenty years later Cornelius Drebel contrived, independently, a similar instrument. It remained for Newton and Fahrenheit, in the latter half of the 17th century, to devise the scale which is now in common use in this country. The freezing and the boiling point of water were used as fixed points in this scale, but both observers seem to have been obsessed by the endeavour to include the temperature of the human body as a fixed point ; and an endeavour to fix an absolute zero. Fahrenheit made his zero from the coldest point of the winter in Dantzic in 1709. His scale then read Zero ; freezing point of water, 8 ; temperature of human body, 24 ; boiling point of water, 53. These figures were too small for comfortable working, so he multiplied them by four, which is his scale as it is now in use. Celsius omitted the absolute zero, and made 100 degrees between the freezing and boiling points of water—the Centigrade Scale. Reaumur followed the same points, but made only 80 degrees. Most scientists have

accepted the Centigrade Scale, and of late years Lord Kelvin has worked out an absolute zero at 273 degrees Centigrade below the freezing point of water.

Rev. R. H. Tourtel, B.D., read the concluding part of his paper on the Ancient Names of the Bays and Rocks of the Bailiwick, this portion dealing specially with the Alderney area. An interesting discussion followed the reading of this paper, which is printed further on in these pages.

Monthly Meeting held on March 18th, 1903, Mr. A. Collenette, Vice-President, in the chair.

The following were unanimously elected members of the Society :—

Dr. Kelson, M.R.C.S., L.R.C.P.; Mrs. Kelson; Dr. E. L. Robinson, M.R.C.S., L.R.C.P.; Col. H. Le Mottée, Jurat; Mr. F. L. Tanner, L.D.S., F.R.C.S.; Major T. Macleane; Dr. H. S. Wild, M.R.C.S., L.R.C.P., and Mr. J. W. Nash.

Mr. G. Dalgliesh exhibited a specimen of the Hairy Porcelain Crab (*Porcellana platycheles*) a common and widely distributed species, taken at Fermain Bay.

The Secretary announced the receipt of several volumes presented to the Society (which will be enumerated in the Annual Report) and reported that he had lately searched for and found, at one of its stations at L'Ancresse, the minute Violet (*Viola nana*), one of the plants peculiar to the Channel Islands.

The second of the series of short scientific lectures was delivered by Mr. F. Holiday, the subject being "The Study of Rocks by means of thin Sections." It gave a clear and interesting explanation of the processes employed, and the new ideas of the structure of rocks obtained by this means. The lecturer alluded to the great scientific results attained by the study of living animal and vegetable organisms under the microscope, leading up, through the study of fossils, to the structure of the rocks themselves, and the deposits in which the fossils were found. Thus, altogether a new light had been thrown upon the conditions under which crystalline rocks came into existence, and some idea could be formed as to the rapidity or slowness of the process, whether under pressure, whether the mass has since undergone a metamorphosis, and so on. Several very interesting sections were exhibited under microscope, and by means of various diagrams Mr. Holiday explained how these thin sections were prepared.

Monthly Meeting held on April 22nd, 1903, Dr. J. Aikman, President, in the chair.

Mr. W. Davidson and Mr. E. Butler were unanimously elected members of the Society.

Mr. Derrick exhibited a fresh specimen of the small Violet he alluded to at the last meeting, and made some remarks on the peculiarity of its distribution in the Channel Islands, where it appears to be confined to Guernsey and Jersey.

The third of the series of short scientific lectures was delivered by Mr. R. C. Mabbs, the subject being "Some Low Temperature Phenomena." The origin of the idea of absolute zero was explained, and one method of finding it given. The chief modes of artificially cooling bodies were then mentioned, and the Hampson air liquifier was described in some detail. The lecturer then went on to describe some of the curious phenomena which are observed when bodies are exposed to this extreme cold. The fact that bacteria are not killed even when placed in liquid hydrogen provoked much interest and some discussion. Mr. Mabbs mentioned the anomalous results obtained in connection with the phosphorescence of bodies when much cooled, and discussed some of the possible results of reaching absolute zero itself.

Mr. Derrick made a few remarks on the mosses of Sark, of which he had made a collection during a visit to that island at Christmas. They had been named by Mr. E. D. Marquand, who would later on prepare a paper on the subject, but Mr. Derrick hoped in the meantime to add a few further species to the list.

Monthly Meeting held on May 20th, 1903, Dr. J. Aikman, President, in the chair.

Mr. Collenette exhibited, and made remarks upon, a stuffed specimen of the Horned Screamer, a curious bird from Brazil, called by the natives *Chaja*, recently presented to the Museum by Mr. A. Stevens, of Belmont Road.

Mr. G. Dalgliesh exhibited a specimen of the Black-throated Diver, a bird rarely visiting Guernsey, which had been washed ashore at Cobo. This led to a discussion on Guernsey birds, and it was decided to form an Ornithological Section, Mr. Dalgleish being appointed its Hon. Secretary. Another section was formed for Marine Zoology, a subject which hitherto has received but little attention from the

members of the Society, and Mr. R. C. Mabbs undertook the duties of its Honorary Secretaryship.

Mr. Dalgliesh also exhibited stuffed specimens of several of the smaller English quadrupeds, and a Flying Squirrel which he had shot in the Himalayas. An animated discussion ensued on the smaller mammalia of the Sarnian area, and the peculiar distribution of certain species.

Mr. W. Sharp read a most interesting paper prepared for the Society by Mr. Herbert Fleure, B.Sc., on "Some Points in the History of the Ormer." This paper will be found in the following pages, but unfortunately it is not possible to reproduce the author's admirable drawings showing details of anatomy and structure.

Monthly Meeting held on Sept. 16th, 1903, Mr. A. Collenette, Vice-President, in the chair.

Mr. H. Gallienne was unanimously elected a member of the Society.

The Chairman said they all accorded a cordial welcome to Mr. E. D. Marquand, who had come back to reside in Guernsey after an absence of eight years. They would remember that two years ago a very high distinction was conferred on Mr. Marquand. The Linnean Society of London had unanimously elected him an Associate, a much-coveted honour, since the number of Associates was strictly limited to twenty-five, and a new election could only take place when a vacancy occurred. It was one of the highest honours Science had to bestow in this country.

The Hon. Secretary reported the receipt of several books and publications, and laid on the table a large collection of Flowering Plants, mostly from Guernsey, made between forty and fifty years ago by the late Miss Guille, who was a member of this Society up to the date of her death early in this year. This collection, which contained much that was valuable and interesting, had been presented to the Society by Miss Guille's executors, and a detailed account of it would be given in the Annual Report of the Botanical Section.

Mr. E. D. Marquand reported the occurrence in Alderney of a plant new to the Channel Islands, the Scarlet Horn Poppy (*Glaucium phœniceum*), found by Capt. T. Broughton.

Mr. W. A. Luff exhibited some limpet shells and flint-scrapers found during the excursion to Ronceval; also a small Dipteron found among rockpools on the shore, and believed

to pass its larval stage among seaweeds which are constantly submerged. Mr. Luff also read a paper by Mr. G. Dalgliesh on Guernsey Birds, which is printed in the following pages as the Annual Report of the Ornithological Section.

Mr. W. Davidson communicated some notes on spiders' webs adhering to the glass of his greenhouses.

The members then adjourned to the Museum, where Mr. Collenette read a paper (published further on) describing the rare fish *Luvarus imperialis*, which was captured here, and had recently been mounted and added to the Museum.

Monthly Meeting held on October 21st, 1903, Mr. W. Sharp, Vice-President, in the chair.

The Hon. Secretary reported the receipt of several books and publications.

A small Cuttlefish (*Sepia elegans*) captured at Plymouth, and presented to the Museum by Mr. G. Dalgliesh, was exhibited.

A report of the Summer Excursions was read by the Hon. Secretary, as follows:—

For the summer of 1903 the annual programme of Excursions was issued as usual, but unfavourable weather, the characteristic of the year, sadly marred the success of the expeditions.

(1) Jerbourg, June 10.—Much attention was given to the ancient trenches and signs of building near Doyle's Monument. Measurements were taken, the general lines of direction examined, and other information collected for the purpose of preparing a paper on the subject, to be read at one of the forthcoming winter meetings.

(2) Herm, June 13.—To the great disappointment of many persons, this excursion had to be abandoned, owing to bad weather. Permission had been obtained to explore the south cliffs, the Creux, and the great cave there, and special arrangements had been made by the late Mr. Bristow, Prince Blucher's agent.

(3) Bordeaux Harbour, June 17.—Considerable silting has taken place, altering the bed of the harbour, and this has greatly diminished the number of sea anemones, zoophytes, and other marine creatures which made this part of the coast noted. A visit was made to Houmet Paradis, an outlying islet.

(4) Ronceval, July 1.—Quarry workings were examined, and in one a small pocket of limpet shells, like a miniature

kitchen-midden was exposed. In it there was a circular flint fragment, with a cutting edge—possibly a flint implement. A larger stone, evidently intentionally shaped, was found in the same neighbourhood. Mr. Henry, of the Vardes, very kindly pointed out many notable features in the architecture of this old mansion, and numerous pieces of curious and antique furniture.

(5) Vale Church, July 15.—A large number of members and visitors assembled to hear the extremely interesting discourse of the Rev. G. E. Lee, F.S.A., on the history and description of this ancient church.

(6) Sark, July 25.—This excursion had to be abandoned on account of bad weather.

(7) Les Thielles, August 12.—In the course of the exploration of the cliffs of this bold and rugged coast, Mr. H. Le Lacheur conducted the party to the spot where one of the rarest of Guernsey plants, *Asparagus maritimus*, was growing in good condition, and bearing berries.

(8) La Corbière, August 26.—Bad weather again, so this excursion could not take place.

(9) Castle Cornet, August 31.—This proved one of the most successful excursions of the year, and was attended by a large number of persons. Mr. Collenette acted as cicerone, and pointed out the principal features of interest in this ancient fortress, among others the cell from which the three captives, Carey, De Beauvoir and De Havilland, escaped in 1644; as also the prisoners' walk, the ancient passages, towers, dungeons, windows and archways still remaining as relics of a bygone age.

A new feature was introduced this year to stimulate a love of natural history among the young. Invitations were sent to the colleges and schools, offering to conduct parties of elder pupils in walking excursions during the summer. A considerable number responded, but only from the Intermediary schools. Messrs. Derrick, Sharp, Collens and Mabbs conducted the parties, and attention was directed to the trees, plants, birds and insects seen on the way. These walks were much enjoyed by the boys, and so was a scramble among the rocks round Castle Cornet.

Mr. Luff read a lengthy paper by Mr. A. H. Swinton, F.E.S., describing a paved lane at the King's Mills, above La Grange, in which the pavement showed evidences of antiquity; and, as Câtel or Castel was originally a fortress or camp, the author thought it possible that this was a portion of an old Roman road leading from Vazon Bay to Castle

Cornet. At that spot he had picked up among the stones two pieces which somewhat resemble the Roman *tessaræ* used in flooring. In some entomological notes Mr. Swinton remarked that the Speckled Wood Butterfly (*L. ægeria*) seems in Guernsey to be a climatic rather than an insular variety; it is somewhat more orange than in the south of England, but less so than in the south of Europe. A specimen of *H. Tithonus* from Moulin Huet was darker than ordinary English specimens, and the beetle *Timarcha coriaria* seemed in these islands to be always blue, instead of purple as in England. A large green cricket (*Locusta viridissima*) caught among reeds at Grande Mare had the hind wings larger than English and French specimens. Other grasshoppers (*Stenobothrus variabilis*) captured in Guernsey were all smaller than usual, indicating a small insular race.

Mr. E. D. Marquand read a paper on the Mosses of Sark, which is printed in the following pages, and then proceeded to give a critical review of a recently-printed book on the Flora of Jersey, by Mr. L. V. Lester-Garland, M.A., Principal of Victoria College. Taking the whole phanerogamic flora of the Channel Islands, there are, according to the author, 81 species peculiar to Jersey, 35 peculiar to Guernsey, 11 peculiar to Alderney, and 2 peculiar to Sark.

Mr. Collenette made a few remarks on the history of Castle Cornet, and was followed by Mr. T. W. De Guérin, who added much valuable information on the subject derived from the study of ancient documents, making it clear that there was, in the reign of Edward I., a family in Guernsey named Cornet, from whom probably the castle and the street derived their names. A great deal of new light has recently been thrown on the early history of the old fortress, and it is greatly to be hoped that Mr. De Guérin will allow his notes to be published.

Monthly Meeting held on November 18th, 1903, Mr. E. D. Marquand, A.L.S., Vice-President, in the chair.

The Chairman read a paper on the Birds of Alderney, which is printed in these *Transactions*.

Mr. W. A. Luff read an interesting communication by Mr. Edward Saunders, F.R.S., published in the Entomologist's Monthly Magazine for October. Some extracts from this paper will be given in the Annual Report of the Entomological Section.

Mr. G. T. Derrick read a paper on "Jerbourg and its Fortifications," which is printed in the following pages. An interesting discussion followed, in which Miss E. Carey, Rev. G. E. Lee and Mr. T. De Guérin took part; it showed a consensus of opinion that the well-known trenches were thrown up by the ancient Celtic people, and that there never was a real castle on the spot.

Monthly Meeting held on December 16th, 1903, Mr. A. Collenette, Vice-President, in the chair.

Dr. W. Duncan, of La Plaiderie, was unanimously elected a member of the Society.

The Secretary reported the receipt of several books and publications which will be enumerated in the Annual Report.

A paper on the Ichneumonidæ of Guernsey, and another on the Coccidæ of Guernsey, were read by Mr. W. A. Luff. These are printed in the present number of the *Transactions*.

Mr. E. D. Marquand contributed a Further List of Additions to the Flora of Alderney, which will be found in the following pages.

Miss E. Carey exhibited a tracing of an ancient Map of Guernsey, Sark and Herm, made in the reign of Henry VIII. to the order of Lord De Saumarez, the original being among the Cotton MSS. in the British Museum.

A discussion arising as to the local peculiarities of the *patois* spoken in various parishes of the island, the members present unanimously agreed that an effort should be made to preserve the pronunciation by means of the phonograph, the records being deposited under seal in safe keeping for a number of years.

The Secretaries of the various sections next read their respective Reports, as follows :—

REPORT OF THE BOTANICAL SECTION.

At Mr. Derrick's particular request I have undertaken to prepare the Annual Report of the Botanical Section, and to act for the time being as its Honorary Secretary, an office which Mr. Derrick has most ably filled for many years past. And I do this most willingly, firstly, because I am always glad to assist in whatever way I can in advancing the work of the Society, and secondly, because the past year has been every whit as successful as its precursors, and as productive of good results.

Additions have been made to the recorded flora of five of the islands which compose the Bailiwick of Guernsey (or the Sarnian Islands, as I prefer to call them), and in the case of Alderney and Sark two new fields of research have been opened up, with gratifying success. Already a considerable amount of new material has accumulated since the publication of the *Flora of Guernsey*, so that if we go on at the same rate it will be necessary in a few years' time to embody all the additional matter in the form of a *Supplement*. Meanwhile, extremely useful work can be done by devoting special attention to the cryptogamic flora of all the smaller islands, from Sark downwards.

In order to facilitate future reference, it will be convenient in the present Report to summarise the results of the year under each island, taking them in the usual order.

GUERNSEY.

A very interesting collection of Flowering Plants, gathered in Guernsey between forty and fifty years ago by the late Miss Guille, was recently presented to the Society. The specimens are in good preservation, and many of them throw light on species which have long since disappeared. Unfortunately the collection is not complete—as if a portion were missing. There are no representatives, for example, of the large order of *Umbelliferæ*. Looking through the collection I find several unrecorded stations for some of our rarest wild flowers, which will be duly noted at a future time. A word must be said, however, about one or two of the most interesting species in Miss Guille's collection.

The best of all is *Wahlenbergia hederacea*, the Ivy-leaved Bell-flower, of which there is a good specimen labelled "St. Martin's, 1858." The former existence in Guernsey of this lovely little flower is thus conclusively proved, but it is remarkable that no one seems to have seen it either before or since; in fact, this is the only positive evidence of the occurrence of *Wahlenbergia hederacea* in the Channel Islands, for Mr. Lester-Garland, in his recently-published *Flora of Jersey*, doubts its reputed existence in that island, although it was recorded more than sixty years ago by Babington in the *Flora Sarnica* as occurring in Jersey.

There is a specimen of *Asplenium lanceolatum*, var. *microdon*, from "St. Pierre-du-Bois, October, 1856," and one of *Mentha pulegium* from "Braye du Valle, September, 1850," a large plant eight inches high. The sheet containing *Ophioglossum lusitanicum* is marked "Cliffs near Petit Bot

Bay, November, 1853," although Wolsey's first discovery of this little fern is usually dated January, 1854.

In my *Flora of Guernsey*, I stated that I did not exactly know who first discovered *Cicendia pusilla*, one of the very rarest and most interesting of Guernsey plants. I am now able to settle the point, through the kindness of Mr. Frederick Townsend, M.A., the author of the *Flora of Hampshire*. In a letter on another matter which I received from Mr. Townsend (dated 16th June, 1903) he says: "I think you may like to know the history of the discovery of *Cicendia pusilla* in Guernsey. I was in Guernsey in 1850 and made the acquaintance of Captain Gosselin, who, though no botanist, was an enthusiastic lover of flowers. He used to bring me armfuls of plants of all kinds to name for him, and one day among these were specimens of *Cicendia pusilla*. I recognised it at once as a *Cicendia*, and new; but having no books with me at the time I sent it to Professor Babington, who noticed it as *Cicendia Candollei*, Griseb., in the Botanical Gazette for 1850 (December) p. 327. I visited the spot "on waste broken ground near Paradis, Guernsey," and found in the same spot *Cicendia filiformis* and *Radiola millegrana*. I told Professor Babington later on that it was Captain Gosselin who first gathered the plant, as I knew it would please him to see his name in connection with it." Now, in Miss Guille's collection there are some very large specimens of *C. pusilla*, one of them nearly three inches high; and, curiously enough, they were gathered during the same season as Mr. Townsend's, for the sheet is dated September, 1850.

There are many other plants collected by Miss Guille half a century ago about which I would like to say something, but I must reserve my remarks for a future occasion.

During the month of September last I was pleased to find growing in the sand at mid-tide level at Grand Havre a plant which is new to the Guernsey list, viz., the var. *angustifolia* of *Zostera marina*. It is a rare form, and has often been mistaken for *Zostera nana*, on account of the remarkable narrowness of the leaves. I am indebted to Mr. Arthur Bennett, F.L.S., for determining this plant.

In a letter to Mr. C. P. Hurst, dated August 7th, 1902, the veteran Jersey botanist, Mr. John Piquet, says: "Years ago when I was out botanising with Mr. G. Wolsey, he showed me plants of *Linaria supina* growing amongst rubbish near St. Sampson's Harbour." This would be about the

early sixties. This plant, of course a casual, has never been recorded before from the Channel Islands.

ALDERNEY.

The additions made during the past twelvemonth to the recorded flora of Alderney are so numerous that they could not well be incorporated in this Report; they form the subject of a separate paper, which will be found further on in these pages.

The quite unexpected discovery of a *Chara* was one of the events of the year, whilst the addition of several mosses and seaweeds new to the Sarnian area, together with the comparatively long list of Fresh-water Algæ which has been drawn up, again confirm the opinion I have more than once expressed, that considering its size, Alderney is unquestionably the most interesting of all the Channel Islands from a botanical standpoint. It is hardly probable that any considerable addition will be made to the recorded flora for some years to come, and, therefore, it may be useful to give here a synopsis of the flora of Alderney as far as at present known:

Flowering Plants	516	species.
Equisetaceæ	3	„
Ferns	13	„
Lycopodiaceæ	1	„
Characeæ	1	„
Mosses	106	„
Hepaticæ	21	„
Fungi	109	„
Lichens	115	„
Seaweeds	232	„
Fresh-water Algæ	72	„
Total	1,189	„

SARK.

In last year's Report sixteen new Flowering Plants were added to the recorded flora of Sark. This year Mr. Derrick has sent me four additional species, viz.: *Ranunculus Baudotii* from the pool at Clos Buret, *Mibora minima* from the cliffs near Creux Derrible, and two others without specified locality, *Scandix pecten-veneris* and *Lolium italicum*. The occurrence of *Mibora* in Sark is the more interesting since it does not grow in Alderney, I think—at any rate I searched for it there for four years, but without success. Another species new to Sark, *Silene nutans*, was omitted in

last year's Report. One fine plant, probably a casual, was found in 1902, near Dixcart Bay, by Mr. C. P. Hurst.

An important list of 60 mosses and 22 hepaticæ, collected in Sark by Mr. Derrick, will be found on another page of these *Transactions*. This brings the moss-flora of Sark more on a level with those of Guernsey and Alderney; but the lists will yet admit of considerable extension.

Two new lichens were sent me by Mr. Derrick, viz.: *Peltigera polydactyla* from the valley between Creux Road and La Forge, and also from the cliffs at Le Pot, Little Sark, and *Sticta pulmonaria*, found at Vermandez, Little Sark.

HERM.

In May last Mr. Derrick found in Herm the little sedge *Carex præcox*, a plant new to the island. The occurrence of *Lagurus ovatus* recorded last year is interesting, but I do not for a moment believe this grass to be indigenous to Herm. I have no doubt whatever that it was intentionally introduced from Guernsey, as we know very well was the case in Jersey.

A list of Herm mosses has been started with four species collected by Mr. Derrick, viz.: *Tortula ruraliformis*, *Pleuropus sericeus*, *Brachythecium purum* and *Hypnum cupressiforme*. I shall be pleased to receive any mosses which may be collected in Herm, with a view to compiling a more complete list.

BRECHOU.

In Mr. Cecil P. Hurst's excellent and exhaustive paper on the flora of Brechou in last year's *Transactions*, no less than eight Flowering Plants and one Fern are noted which have not been detected in Sark, although the two islands are only separated by a narrow channel, seventy yards wide. It is probable, therefore, that most, if not all, these absentees will ultimately be found growing in the larger island.

Mr. Hurst records two mosses only, but there should properly have been four, as he sent me specimens at the time for identification, but I unfortunately mislaid the parcel and did not find it again until after his paper was in print. These two additional Brechou species are *Ceratodon purpureus* and *Mnium hornum*.

E. D. MARQUAND, Sec. Bot. Sect.

REPORT OF THE GEOLOGICAL SECTION.

SUPERFICIAL DEPOSITS.

In the excavation of the site for the new schools in this locality, superficial deposits from 6 to 8 feet thick have been exposed. They consist of yellow loam and sand in alternating layers (Route Isabelle type). These lie on pseudo-stratified decomposed rock, which, in the sections across the dip, is seen to merge, by a gradual curve, into the undisturbed decomposed rock.

St. Andrew's Brickfield.

The deposits in the field at the corner of the road leading to the Wesleyan Chapel, which are worked for brickmaking, are very similar to the above, the sandy layers being, however, less distinct, and the curvature of the decomposed rock more plainly exhibited.

Sark.

Mr. G. T. Derrick reports a section near Dixcart Hotel, shewing 8 feet of deposits of the same type as the above, *i.e.*, interstratified sand and clay, some of the sandy layers being 3 inches thick, but the sand is hardly so pure as at Route Isabelle; the clay being rather more plastic. It is somewhat remarkable that in the adjoining lane leading from the hotel to the plateau above, no trace of superficial deposit is found, only decomposed rock being exposed on both sides of the lane. In all the above cases, and in most others of similar deposits, the situation is the slope on the side of a glen or valley. There is generally no opportunity of ascertaining whether the deposits continue under the bottom of the valley, but in some cases they certainly do not. The valleys seem to have been deepened since their deposition and the surface has been considerably modified by erosion.

ROCKS.

Houmet Paradis.

In the rocks exposed at low water on the east side of this islet, granite, similar to that at Fort Le Marchant and Roque Balan, L'Ancresse, is seen. It is intrusive in the diorite, producing in places very distinct veins, and in others blending in various proportions. This granite seems to be the margin of a considerable area covered by the sea.

Les Génâts, Câtel.

Mr. A. Collenette reports having examined a well on the above estate, which shewed a large vein of thoroughly decomposed amorphous diorite dipping north-east. The clay resulting therefrom is impervious and retains throughout its blue colour, which, in Mr. Collenette's opinion, indicates that the decomposition took place under water.

C. G. De La Mare, Sec. Geol. Sect.

REPORT OF THE ENTOMOLOGICAL SECTION.

Owing to wet and stormy weather, the past season has been an unfavourable one for the entomologist. I have no record of the occurrence of *Acherontia atropos* (Death's Head Moth) and very few specimens of *Sphinx Convolvuli* (Convolvulus Hawk Moth) have been seen.

Many of the commonest butterflies were very scarce, and the Clouded Yellows, *C. Hyale* and *C. Edusa*, did not put in an appearance. The larvæ of *Melitæa Cinxia* were not in their usual abundance on the cliffs at Moulin Huet and the Gouffre. On August 16th, I captured a fine female specimen of *Gnophria quadra* (Four-spotted Footman). It was resting on an ivy leaf on the wall bordering the Vallon Estate. The only previous record of this species is the finding of two larvæ about 16 years ago on some old lichen-covered apple-trees, close to the spot where this specimen was captured. The Rev. F. E. Lowe has again been successful in breeding specimens of both *Dianthæcia conspersa* and *D. capsincola* from pupæ dug up at the roots of their foodplants. *Callimorpha Hera* (Jersey Tiger Moth) was unusually late on the wing; the Rev. F. E. Lowe reports they were still flying on September 19th.

I am pleased to be able to record the capture of a second specimen of that beautiful beetle *Calosoma sycophanta*. It was taken by one of Mr. Sharp's schoolboys on July 10th. Mr. E. D. Marquand reports two new stations for that curious marine Hemipterous insect, *Aëpophilus Bonnairëi*, viz., Fermain Bay and Grand Havre.

In last year's report I mentioned the capture of a curious marine fly, of which I had taken specimens both in Jersey and Guernsey, and which had been named *Clunio marinus*. These may be rightly named as regards the Jersey specimens, but having taken a number of examples in rock-pools at

Moulin Huet Bay during August of this year, I sent specimens to Mr. A. C. Imms, of the Zoological Laboratory, University of Birmingham, who informed me that they were *Clunio bicolor*, Kieff, a species which he had just added to the British list, and described in a paper published in the *Transactions* of the Liverpool Biological Society, Vol. XVII. (1903). Mr. Imms's specimens were taken at Port Erin, Isle of Man, during August, 1902. Among my specimens were one or two individuals which appeared somewhat different from the rest, but not having been preserved in spirit, were too much shrivelled to make out the details. Of these Mr. Imms says: "The tarsi are bright yellow—if this is not due to coagulation of blood in these parts (or some unusual process), but is the natural colour, the insects belong to a species new to Britain, and most likely to science."

Three additions have been made to the Alderney list. The pretty little Dragon-fly, *Ischnura elegans*, was taken by Mr. E. D. Marquand at Rose Farm pond; it also occurs with us at the Grand Mare, Vazon. *Musca tempistiva* is a species of *Diptera* not included in the British list, and *Agrotis exclamationis* is a nice addition to the Alderney *Noctuæ*.

During June Mr. Edward Saunders, F.R.S., again visited Jersey and captured nineteen species of *Aculeate-Hymenoptera*, additional to those recorded by him last year. He gives an interesting account of these captures, with comparisons between the Jersey, Guernsey and Alderney species, in the Entomologist's Monthly Magazine for October.

The best capture was that of a fine species of *Ammophila* (Sand Wasp), new to science, which he has done me the honour of describing under the name of *A. Luffii*. Mr. Saunders concludes his paper by stating that "the number of species now recorded for Jersey amounts to 165, against 104 from Guernsey, and 90 from Alderney; of these 53 are common to all three islands; 75 are recorded from Jersey only, 21 from Guernsey only, and 14 from Alderney only; 22 occur in Jersey and Guernsey and not in Alderney, 16 in Jersey and Alderney but not in Guernsey, and 7 in Guernsey and Alderney but not in Jersey."

Lists of the *Ichneumonidæ* and *Coccidæ* of Guernsey have been read and will be published in the present number of the *Transactions*.

ADDITIONS TO THE LIST OF ALDERNEY INSECTS.

LEPIDOPTERA.

Agrotis exclamationis.—Taken by Capt. Broughton, R.N., F.E.S.

NEUROPTERA.

Ischnura elegans, *Lind.*—One specimen taken by Mr. E. D. Marquand, A.L.S., at the old millpond in Rose Farm valley; several others were seen at the same time.

DIPTERA.

Musca tempistiva.—One specimen captured by Mr. E. D. Marquand.

ADDITION TO THE DIPTERA OF GUERNSEY.

Clunio bicolor, *Kieff.*—Numerous specimens captured in the rock-pools at Moulin Huet Bay during August.

W. A. LUFF, Sec. Ent. Sect.

REPORT OF THE FOLK-LORE SECTION.

I think that the members of this Society will agree that so far as the Folk-lore Section is concerned, the chief event of the scientific year has been the publication (October 12th, 1903) of the long-expected and valuable volume of "Guernsey Folk-lore," which we owe to the forethought and painstaking care of the late Sir Edgar MacCulloch, sometime Bailiff of the Island, and the first elected President of our own Society (1882-1884).

The matter of the volume seems to have been collected from fifty to sixty years ago, and thus many interesting facts have been included, the memory of which, in later times, would, but for this, have entirely passed away.

At Sir Edgar's death (July 31, 1896) some seven years ago, he bequeathed this manuscript to the Royal Court, of which for more than half a century he had been a member, at the same time setting aside a sum of money to aid in its publication. Miss Carey, of the Vallon, very kindly—as a labour of love and without any remuneration—consented to edit the work, and with the assistance of a Committee of the Royal Court, to see it through the press. The Bailiff and Jurats supplemented, from a fund of their own, the sum that Sir Edgar had designated for publication purposes; the work was placed in the hands of Mr. Clarke, of the States Arcade, and the result is the large and handsome volume which we now possess, and which has been brought

out in a style at once creditable to the island, and worthy to be regarded as a graceful and fitting tribute to the author's memory.

I may just remind the members that, while Sir Edgar's work was passing through the press, I purposely refrained from preparing any folk-lore items for publication in our own *Transactions*. I surmised that the eagerly-expected volume would be a very comprehensive one; and I did not forget that the available space in our own annual publication is necessarily limited. It would, therefore, have been unwise to occupy room in our *Transactions* by recounting legends and traditions that were very likely to have been already chronicled by Sir Edgar himself. Consequently, I merely jotted down for remembrance whatever folk-lore I met with, and awaited a more fitting season for giving it further publicity. By this course I find that I have avoided several repetitions.

I notice, too, that Miss Carey has been able to make use, either in her notes or appendices, of various stories and experiences that I narrated to her—which she courteously acknowledges—and I am very glad she found them useful.

Every reader of the book will note its massive substantiality, but only those who have had some actual experience of similar work will be able, adequately, to realise the immense amount of self-denying toil—in addition to the necessary talent—which Miss Carey must have expended on her exhaustive and patriotic task. We learn from her editorial preface that Sir Edgar's manuscript, as placed in her hands for transcription, was contained in three manuscript books, closely written on both sides of the paper, and interspersed with innumerable loose leaflets, crammed with notes, additions, corrections and comments. The various legends, customs, traditions, &c., had been jotted down by Sir Edgar, just as he met with them, and without any attempt at order or classification. Miss Carey, however—like an accomplished folk-lorist, as she is—while, on the one hand, literally transcribing these notes and copying the manuscript word for word, exactly as she received it, was careful, on the other hand, to properly assort and distribute the matter, placing the different items under their appropriate headings, and altogether arranging the volume with scientific precision, as recommended and followed by the English Folk-lore Society. This, of course, greatly added to the labour, but it also infinitely increased the scientific value of the result, and one is not surprised to learn that Miss Carey devoted the

leisure of three years to the carrying out of her generously-undertaken task.

I mentioned just now that Sir Edgar was our first President. When the statutory two years of his presidential sway terminated, he was unanimously elected Patron of the Society, and so continued to the end of his life. It is also a pleasure to add that Miss Carey, too, is a valued member of the Society.

In now recording, in our *Transactions*, the advent of this latest treasury of legendary lore, I feel sure that the members will be glad to join, as a Society, in most cordially expressing their pleasure at the completion of the volume, and most heartily thanking everyone who has been concerned in its preparation and production.

J. LINWOOD PITTS, Hon. Sec. Folk-lore Sect.

NOTE.—Sir Edgar MacCulloch, F.S.A., was born at Ann's Place, St. Peter-Port, Guernsey, June 1, 1808; elected Jurat of the Royal Court, Feb. 28, 1844; Lieutenant-Bailiff, Jan. 18, 1869; Bailiff, Sept. 29, 1884; Knighted May 8, 1886; retired from the Bailiffship in the early part of 1895; died July 31, 1896, at his residence in the Pollet, aged 88 years and 2 months.

REPORT OF SECTION FOR MARINE ZOOLOGY.

For many years this Society has lamented that so little work has been done by its members in connection with the extremely rich marine fauna of the Sarnian waters. Mr. Marquand's paper on the Marine Shells of this region has given an impetus to this work, and since there are a few members interested in this department, it was decided to form a section for Marine Zoology, of which the Society elected me Secretary. But there is little to report. We have the capture of the rare fish, *Luvarus imperialis*, described elsewhere in these *Transactions*, and also a paper by Mr. H. Fleure on the anatomy of the Ormer. Two of Guernsey's rarities are again reported, viz.: a Mediterranean crustacean, *Scyllarus arctus*, and that link with the past, *Comatula rosacea*, or Rosy Feather-star, which was found independently by Mr. Fleure and Mr. Marquand between tide-marks at Bordeaux Harbour. Mr. Marquand also reports several additions to his published list of Mollusca. I would like to mention one branch of the work in which members may take part without much technical training. I refer to the observation of habits and life-history of sea animals, both on the shore and in aquaria. The scope is enormous, and the chances of making original observations considerable.

Mr. E. D. Marquand, A.L.S., reports as follows :—

Since the publication, two years ago, of my paper on the Marine Shells of Guernsey and the Lesser Channel Islands, in the *Transactions* of this Society, Mr. J. T. Marshall has completed his *Additions to British Conchology*, and in the concluding portion of this valuable work there are several species and varieties of marine shells from these islands which do not figure in my list. These are enumerated below, together with a few additional species found within our area by other conchologists.

The total number of marine shells, exclusive of named varieties, recorded for the Sarnian Islands in the pages of these *Transactions*, now amounts to 328 species.

I should like to notice the re-discovery of one of the rarest of our Fresh-water shells, *Limnæa glabra*. This species used to occur in Guernsey many years ago, but it is now believed to be extinct. Last year it was my good fortune to find a small colony of living specimens in a little cliff pool at Trois Vaux, in Alderney.

Galeomma Turtoni, *Eds. Zool. Journ.* Alderney, one imperfect valve in shell sand (Mrs. Marquand).

Lepton squamosum, var. *lineolata*, Jeff. Guernsey, 20 fms. (Marshall).

Montacuta bidentata, var. *elliptica*, Wood. Guernsey (Marshall).

M. ferruginosa, *Mont.* Valves frequent in all the islands except Alderney. Living at Herm (Marshall, *in lit.*).

Tellina tenuis, *Dac.* Bordeaux Harbour, a valve (Mrs. Marquand).

T. fabula, *Gron.* One valve at Bordeaux Harbour (Mrs. Marquand).

Psammobia tellinella, var. *lactea*, Marsh. Guernsey and Herm (Marshall). Var. *purpurea*, Marsh. Guernsey and Herm (Marshall).

Ceratisolen legumen, *L.* One fine dead specimen was found some years ago on the shell-beach at Herm by Mrs. Marquand.

Xylophaga dorsalis, *Turt.* A log of timber washed ashore in Alderney in 1902 contained an abundance of these curious shells.

Tectura virginea, *Müll* Mr. Marshall informs me that the elevated form recorded in my list as being common on the shore is merely a raised typical form, and not var. *conica*.

Lacuna pallidula, var. *imperforata*, Marsh. Guernsey (Marshall).

Rissoa striatula, var. *ecarinata*, Mtros. This variety is stated in my paper to be "rather commoner than the type," but Mr. Marshall says this is not correct. He has found only two specimens in Guernsey, and it is everywhere extremely rare.

R. membranacea, var. *elata*, Phil. Mr. Marshall writes me that the record "occurs singly (Tomlin) . . . . . " must be a mistake; var. *elata* is a brackish-water shell, and abundant where it occurs.

Jeffreysia opalina, *Jeff.* Through an oversight the relative frequency of the two species of *Jeffreysia* occurring in Alderney was reversed. *J. diaphana* should have been noted as by far the commoner species of the two.

Homalogyra rota, var. *tricarinata*, Webst. Guernsey (Marshall).

Cerithium reticulatum, var. *lactescens*, Jeff. Guernsey (Marshall).

Cerithiopsis tubercularis, var. *Clarkii*, Jeff. Sark (Marshall).

C. Barleei, *Jeff.* Guernsey, 20 fms. (Marshall). Var. *interrupta*, Marsh. Guernsey, one specimen (Marshall).

C. pulchella, var. *alba*. Was recorded from Guernsey by Jeffreys in 1859, but Mr. Marshall considers this merely a bleached or water-worn form of the type, and not the true var. *lactea*, which occurs in the Scilly Isles.

Purpura lapillus, var *minor*, Jeff. Moulin Huet, Guernsey (Marshall).

P. hæmastoma, *L.* Three specimens of this exotic shell were found many years ago by the late Sir Edgar MacCulloch at St. Peter-Port. Mr. Marshall believes these specimens were most probably brought over by some French vessel, as the locality has been repeatedly searched since, but no further examples have been found.

Murex erinaceus, var. *sculpta*, Jeff. Herm, at very low tide, a colony concealed under stones (Marshall).

M. aciculatus, var. *badia*, Jeff. Herm, at low water (Marshall).

Lachesis minima, var. *pallescens*, Jeff. Sark (Marshall).

Nassa incrassata, var. *simulans*, Jeff. Guernsey (Marshall).

Defrancia gracilis, *Mont.* A monstrosity from Guernsey is without a canal (Marshall).

Pleurotoma costata, var. *coarctata*, Forb. Guernsey, dredged (Marshall).

P. rufa, var. *lactea*, Jeff. Herm (Marshall). Var. *ulideana*, Thomps. Guernsey (Marshall). Var. *Cranchii*, Brown. Channel Isles (Marshall). Var. *angusta*, Jeff. Channel Isles (Marshall).

Marginella lævis, var. *oblonga*, Jeff. Guernsey, 20 fms. (Marshall).

Cylichna cylindracea, *Penn.* Alderney shell sand, one specimen (Mrs. Marquand).

Utriculus obtusus, var. *minor*, Jeff. Guernsey, frequent in dredgings at 15-22 fms. (Marshall).

Acera bullata, *Müll.* Herm, a dwarf form one-third the usual size (Marshall).

Scaphander lignarius, *L.* Herm, at low-water of spring tides, in muddy sand (Marshall).

Philine catena, var. *zona*, Jeff. Guernsey (Marshall).

P. angulata, *Jeff.* Dredged off St. Martin's Point in 22 fms. (Marshall).

P. pruinosa, *Clark.* Guernsey in 18 fms., one specimen (Marshall).

Assiminia littorina, *Del. Ch.* Bordeaux Harbour, in *Lichina* at high-water mark (Marquand).

Otina otis, var. *candida*, Jeff. Herm (Marshall).

Spirialis retroversus, var. *macandreæ*, F. and H. Guernsey, in 22 fms. (Marshall).

Spirula Peronii, *Lam.* In Miss Lukis' collection there are seven specimens of this shell, which were found in Alderney in 1846 by her brother, the late Mr. J. W. Lukis.

R. C. MABBS, Sec. Marine Zool. Sect.

REPORT OF THE ORNITHOLOGICAL SECTION.

These notes have been taken since my arrival in the island in November last (1902). The exceptionally hard

weather of last winter proved very trying to many species, and I have picked up Robins, and seen other small birds quite numbed with the cold. During the latter part of November and December, the hedgerows were infested with hungry hordes of Redwings and Fieldfares, though after these months I saw very few Redwings, and no Fieldfares.

Redwing (*Turdus iliacus*) and **Fieldfare** (*T. pilaris*).—Both these Thrushes were plentiful last winter.

Ring Ousel (*Turdus torquatus*).—I noticed one specimen hanging in the Town market among a number of Redwings and Thrushes.

Firecrest (*Regulus ignicapillus*).—I was delighted to find this beautiful little bird fairly common, though I have not noticed its near ally, the Goldcrest (*R. cristatus*) as yet.

Bullfinch (*Pyrrhula europea*)—I think this species must be very rare. I have only noticed it twice, and I see Mr. Cecil Smith marks it as "rare" in his list of the Birds of Guernsey.

Chough (*Pyrrhocorax graculus*.—This interesting bird is now-a-days only an occasional visitor, though I have been informed they were common here some years ago. I noticed one specimen at Moulin Huet in December 1902.

Rook (*Corvus frugilegus*).—I have only seen one so far; near the Forest in April.

Kingfisher (*Alcedo ispida*).—I have a specimen shot here last winter, and Mr. Jago, the taxidermist, told me he has had several to preserve.

Long-eared Owl (*Asio otus*).—A scarce winter visitor. I have a fine specimen, shot here last winter.

Cormorant (*Phalacrocorax carbo*).—I have not seen many. The next named bird is by far the commoner.

Shag (*P. graculus*) —Very common indeed. A pair I watched in April appeared to be contemplating nesting.

Heron (*Ardea cinerea*).—A fairly common winter visitor. I saw in the Guernsey press last year that a "rare bird of the Crane family" (!) had been shot, and was exhibited at the market. This turned out to be a Heron.

Brent Goose (*Bernicla brenta*).—This goose is a common winter visitor, and I saw and heard several passing over the island at night.

Tufted Duck (*Nyroca cristata*).—I saw a young female of this species hanging in the market in January.

Pochard (*Nyroca ferina*).—I saw a fine male preserved by Mr. Jago, and he informed me that they were not common here.

Smew (*Mergus albellus*).—I saw, hanging up in the Town market, two immature specimens which had been shot off the coast.

Wood Pigeon (*Columba palumbus*).—Not often noticed, and I think it must be rare in this island.

Water Rail (*Rallus aquaticus*).—I saw one specimen at St. Sampson's, feeding beside a drain, in March.

Woodcock (*Scolopax rusticola*).—I noticed one or two for sale in the markets last winter.

Black-throated Diver (*C. arcticus*).—On May 10th, I received an immature bird of this species which was found dead on the beach at Cobo. It was in very poor condition and had no food whatever in the stomach. This is an interesting record as this species has only once before been recorded from Guernsey. This specimen was exhibited by me before the Society.

Great Northern Diver (*Colymbus glacialis*).—Mr. Jago informs me he has had several local specimens to preserve this last winter.

Red-throated Diver (*C. septentrionalis*).—I saw one in December, just off the White Rock.

Puffin (*Fratercula arctica*).—On May 31st I visited the "Humps" off Herm, and found the Puffins breeding there in thousands. The soft ground was fairly riddled with their burrows. No young birds were found, only highly-incubated eggs. Besides Puffins, there were Razorbills, Guillemots, Storm Petrels and Herring Gulls, all breeding.

Sandwich Tern (*Sterna cantiana*).—I have found this bird fairly plentiful here, and know where it breeds.

ARRIVAL OF SUMMER MIGRANTS.

Wryneck (*Iynx torquilla*).—Locally known as "Mackerel Bird." March 31.
House Martin (*Cotile urbica*).—Cobo. April 12.
Wheat-ear (*Saxicola œnanthe*).—Gouffre. March 12.
Swallow (*Hirundo rustica*).—Cobo. April 19.
Cuckoo (*Cuculus europœus*).—St. Peter-Port. April 23.
Night-jar (*Caprimulgus europœus*).—St. Sampson's. May 5.
Swift (*Cypselus apus*).—St. Peter-Port. May 16.
Turtle Dove (*Turtur communis*).—St. Peter-Port. June 7.
Spotted Fly-catcher (*Muscicapa grisola*).—St. Peter-Port. May 1.
Chiffchaff (*Phylloscopus rufus*).—St. Sampson's. March 31.

G. DALGLIESH, Sec. Ornith. Sect.

The Twenty-first Annual Meeting of the Society

was held on January 20th, 1904, Dr. J. Aikman, President, in the Chair.

Mr. G. T. Derrick, Hon. Secretary of the Society, read the following Report of the Council :—

The Society has now completed the twenty-first year of its existence, and continues to maintain the interest of its proceedings, and to accomplish valuable work.

The Council is pleased to announce the organisation of a section for Marine Zoology, with Mr. R. C. Mabbs as Secretary, who, it is hoped, will receive every assistance from members investigating this important, but hitherto neglected, branch of Natural Science.

Archæology has again received special attention during the year, and visits have been paid by the Society to Castle Cornet, to the Vale Church, and to Jerbourg. A lengthy paper on the last-named locality will be printed in these *Transactions*.

Members interested in the older sections have still further added to our knowledge of their various departments,

and their activity and success are shown by the papers herewith appearing.

The introduction of a series of short scientific educational lectures during the spring Session proved a great success, and the Council hope the idea will again be followed up this year. An attempt was made during the summer to interest the elder pupils of our schools in the study of Natural History, and several excursions conducted by members of this Society were organised. The result was fairly satisfactory, as quite a number of young enthusiasts attended.

The indoor meetings have, as a rule, been very well attended, and the general interest in the Society's work maintained; some of the summer excursions proved very enjoyable, as well as instructive.

The Library belonging to the Society has now become both extensive and valuable; it is at present being re-arranged by Mr. R. C. Mabbs, who is compiling a subject-catalogue of the books and publications, so that members may easily obtain access to the great stores of knowledge contained in our Library.

An unusually large number of valuable papers have been read at the evening meetings, most of which will be published in the forthcoming number of our *Transactions*.

The following books and publications have been received by the Society during the year:—

From the Smithsonian Institute, Washington: Report for 1900-1901, Parts I. and II., and 1902; also Bulletin No. 8 (Lakes of S.E. Wisconsin).

From the Academy of Natural Science of Philadelphia: Proceedings, 1902, Vol. 54, Parts II. and III., and Vol. 55, Part I.

From the University of Montana: Bulletin on Volcanic Ashbeds of Montana.

From Lloyd's Library: Bulletin.

From the Boston Society of Natural Science: Vol. 30, Nos. 3, 4, 5, 6 and 7, and Vol. 31, No. 1.

From the British Museum: Handbook of Birds, Vols. II. and III.; Guide to the Coral Gallery; Handbook of Instructions to Collectors.

From the University of Rennes: Travaux Scientifiques, Vol. II., fascicules 1 and 2.

From the Brooklyn Institute of Arts and Sciences: Cold Spring Harbour; Monographs; 1 Beach Flea; 2 Collembola of Cold Spring Harbour.

From the Author: "Pulse and Rhythm," by Mary H. Greenwall.

From the Authors: "The Land and Freshwater Shells of the Channel Islands," by J. R. Brockton Tomlin, M.A., and E. D. Marquand, A.L.S. (Nov., 1902).

With deep regret the Council have to record the death of three members of the Society during the past year, viz,: Mr. A. Bristow, Miss Guille, of Union Street, and Mrs. Boley, of St. Martin's. The two ladies were among the earliest supporters of our Society, and continued their membership up to the date of their decease; they afforded much valuable assistance in carrying on its work, Miss Guille in the botanical, and Mrs. Boley in the entomological sections.

The Treasurer will be able to report that the financial condition of the Society is satisfactory, showing a fair balance in hand after payment of all accounts up to date. This favourable state of things is due to the generosity of the Directors of the Guille-Allès Library, who most kindly voted a donation of ten pounds. For this, as well as for the continued use of a room in which to hold our meetings, and also for a bookcase in which the books are now placed, the Council desire, on behalf of the members, to return their most sincere thanks.

G. T. DERRICK, Hon. Sec.

The election of the Council was then proceeded with. Dr. J. Aikman, President, Mr. G. T. Derrick, Hon. Secretary, and Mr. W. A. Luff, Hon. Treasurer, were re-elected by acclamation. The new Committee was elected by ballot, as follows: Messrs. C. G. De La Mare, L. Pitts, E. C. Ozanne, F. A. Holiday, R. C. Mabbs and F. L. Tanner.

Mr. A. Collenette, F.C.S., then read his annual Report (published in these pages) on the Rainfall and Sunshine in Guernsey for the year 1903, illustrating his remarks by means of several large diagrams and tables.

Mr. E. D. Marquand exhibited and described two abnormal shells of the Ormer, in which the characteristic row of holes was entirely absent. One of these specimens was the original one described by Jeffreys, the other was found in Herm many years ago by the late Mrs. R. S. Boley. At the request of the Council an abstract of Mr. Marquand's remarks is appended as a footnote to Mr. H. Fleure's paper on the anatomy of the Ormer.

ANCIENT NAMES OF THE BAYS, CREEKS, ROCKS, &c.,

ON AND NEAR THE COAST OF THE ISLANDS OF THE BAILIWICK, WITH NOTES, &c.,

BY THE REV. R. H. TOURTEL, B.D., F.S.A.,

Membre de la Société d'Archéologie d'Avranches.

(Continued from page 140.)

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LIST OF ABBREVIATIONS.

Ar.....Arabic.	Ger. .....German.	Port .....Portuguese.
A. Sax....Anglo-Saxon.	Gr.....Greek.	Prov.....Proverb.
B.....Bay.	Heb. .....Hebrew.	Provç.....Provençal.
Br.....Breton.	I.....Islet.	R. .....Rock.
C. ....Creek.	Ic. .....Icelandic.	Rus. .....Russian.
Cl. .....Cliff.	Ir. .....Irish.	S.....Spot on the sea
Ch.....Chaldee.	It. .....Italian.	San. .....Sanskrit.
Com.....Compare.	Kel. .....Keltic.	Sc.....Scotch.
Dan. .....Danish.	Lat. .....Latin.	Sp.....Spanish.
Der. .....Derived.	L. Lat.....Low Latin.	Sw.....Swedish.
Dim. .....Diminutive.	Lit .....Literally.	Syr. .....Syriac.
Du .....Dutch.	N. Fr. ....Norm. French.	Term. ....Termination.
Eng. .....English.	N. T.....Nautical term.	Trans. ....Translation.
Eth .....Ethiopic.	O. Fr.....Old French.	V. .....Valley.
Fig.....Figuratively.	O. Kel.....Old Keltic.	W.....Welsh
Fr.....French.	P.....Point.	
Gael .....Gaelic.	Pl. .....Plural.	

ALDERNEY.

The following note appeared in the *Alderney Gazette* on the 6th November, 1896. "On a fair day, when sky and atmospheric conditions are propitious, the whole French coast, from La Hague Spit to the Biville sands in Diélette Bay, can be plainly discerned from Alderney. Near the Spit itself, and nestling on the slope which leads towards the Beaumont Plateau, is a hamlet, a rude fishing hamlet, called Auderville. It is the nearest living community to Alderney.

How did Aurigny, the island's French name, come to be the English Alderney? The "*ey*," which stands for island, as in Guerns-ey and Jers-ey, being disposed of, we have the stem "*Alder*" left.

As no amount of tongue-twisting can turn "*Riduna*," "*Arica*," or "*Aurigny*," all names by which in the past Alderney has gone by, into Alderney, why not turn to the other side of the Race, but seven miles distant, for a solution? Between "*Alder*" and "*Auder*" the relation is obvious. As the French have a way of saying, the connection *saute aux yeux*.

How easy for the old pilots, and weather-beaten sea dogs, who, in days gone by, sailed up and down the Race, to connect Aurigny, not so much with itself, as with the more prominent Cape La Hague close by, and to call it Auder's isle.

Or, did not, perhaps, the inter-relation of families of the Cape with those of Alderney, have a deal to do with the name?

Who does not know that our island blood is constantly being renewed by an infusion of Auderville, La Hague, St. Germain, and Beaumont blood?

Much as it may prove displeasing to some, yet we will attempt to prove later on that such is the fact and, if so, what more natural than to say, *l'Ile d'Auder*, and from that to Alder-n-ey the transition is easy. The *n* would simply count as a euphonic letter. (Mr. W. J. Picot.)

"*A-rin-i* and *Orgini* in the Breton, Irish, and probably in the Welsh languages, means "island of the point." The Irish wrote it much in the same manner as the Greek and Roman geographers. *Rign*, whence the *Rikihn* of Ptolemy and the *Rien-na* of Pliny, *Rimaul* of Childebert, *Rimch*, of the Romans. *A-dren-i*, whence "Alderney." (Clarke's Mag.)

Br. *A-dren-i*, behind it, *dren*, point, *rin*, guide leading to the point.

1,388.—**Braye.**—B. See 477, 865, 1,396.

1,389.—**Antilles.**—R. Possibly Kel. Br. *ant*, furrow; *les*, enlarged. Another meaning may be given. Br., *antella*, *anteil*, to lay snares.

1,390.—**Champignons.**—R. These rocks have been blasted and made level with the surface of the water.

1,391.—**Jeffreys.**—R. A local name.

1,392.—**Little Jeffreys.**—R. See 1,391.

1,393.—**Roselle Point.**—Br., *ros*, *ross*. W. *rhos*, hillock, see 1,331. (Herm Section), *rhos* may signify a swampy place, or greenish plain. *Rossiam, sive ros dicunt Britannici, facto e re nomine, quod viridante procumbat planitie. Rossia ita dicta antiquo vocabulo, quod alii promontorium, alii peninsulam interpretantur.* (Camden.)

1,394.—**Beaux Chevaux.**—B.

1,395.—**Beaux Chevaux.**—R.

1,396.—**Braye Rocks.**—Br., W. *bras*, large (rocks), or possibly dangerous rocks. Br., *braë* = Fr., *brisoir*. O.F., *brayer* = *briser*. Com., *broyer*. See 477, 865.

1,397.—**Inner Brayes.**—R. See 1,396.

1,398.—**Little Brayes.**—R. See 1,396.

1,399.—**Gallé.**—R. The Kel. root *gal*, means strong, hard, also round. Br., *calet*, *caled*. W., *caled*. Fr., *galet*. N. Fr., *galo* = Fr. *caillou*. See 171, 326.

1,400.—**Grosnez Point.**—Br., *gros*, dove; *nez*, nest. "Nest of the dove." Some take this literally, "Big nose."

1,401.—**Boues de Grosnez Point.**—R. See 1,400.

1,402 —**Outer Fourquies.**—R. "Forked rocks," see 94. Com. A. Sax., *forc*, *furc*. Ic., *forkr*.

1,403.—**Inner Fourquies.**—R. See 94, 1,402.

1,404.—**Crabby rocks.**—A name given to a small creek as well as to rocks. Possibly a Kel. term. Br., *crab*, slanting, pointed; *by*, *be*, opening.

1,405.—**Prince Eugène.**—R. The name of a submerged rock off Crabby bay. A few years ago the *Prince Eugène* (Guernsey vessel) was lost on this rock after striking another rock off the coast of Burhou and coming across the Swinge.

1,406.—**Doyle Point.**

1,407.—**Platte Saline.**—B. Either "Place of salt" or "place where the sea leaps or dashes." Br., *sala*, to bound. Heb., *salal*, to heap up, wave, shake, scatter. San., *sal*. Gk., *salos*, from *hals*, *hallomai*, the tossing or rolling swell of the sea, *zale*. Lat., *salio*, to leap. Fr., *saillir*. Com. W., *silio*, to hull grain. See 716.

1,408.—**Les Jumelles.**—R. The twins (outer and inner).

1,409.—**Tourgis Point.**—An Alderney family name.

1,410.—**Boue des Tourgis.**—R. See 1,409.

1,411.—**Robin.**—R. (No. 1). See 1,412.

1,412.—**Robin.**—R. (No. 2). A rock situated off Point Tourgis. Local name. See 1,413.

1,413.—**Mollet.**—R. See 1,412.—These two rocks are called by some "The outer and inner Robin." Mollet = a local name.

1,414.—**Jumain.**—R. Perhaps "jument," a name given to several rocks in the Channel Islands. The Kel. term *main* = rock.

1,415.—**Little Grosse Rocque.**—R.

1,416.—**Large Grosse Rocque.**—R.

1,417.—**La Brebis.**—R.

1,418.—**Carderone.**—R. Br., *carder*, breaker; *one*, old.

1,419.—**Little Carderone.**—R. See 1,418.

1,420.—**Bersier.**—R. Br., *bers*, *bars*, within. The Kel. term *ier*, *er*, signifies rock. See 467, 866, 1,376.

1,421.—**Corbet.**—R. Either "visible" or "partly difformed rock." See 891, 1,177.

1,422.—**Boues de Corbet.**—R. See 1,421. For the meaning of *boues*, see 12. (Guernsey Section.)

1,423.—**Sous les Monts.**—Cl.

1,424.—**Vaux de Pommiers.**—B. *Vaux*, pl. of O.Fr. *val*, valley. Pommiers, a word somewhat obscure but perhaps *pom* = *bom*, by interchange of consonants. "Limit," perhaps "furrow." See also 1,529.

1,425.—**Sous les Monts.**—R.

1,426.—**Querouelles.**—R. No doubt of Kel. derivation. "Surrounded by many others." Lit., "it is said that there are many." Br., *guer*, *ouelles*.

1,427.—**Inner Querouelles.**—R. See 1,426.

1,428.—**Boues des Sky Lark.**—R. This rock is close to Clanque Fort. Two young men took a boat of that name and stranded on this rock.

1,429.—**Clanque.**—B. The meaning of the word is possibly "white." An appropriate term. I am, however, told that Clanque rock has the appearance of a large bell. In this case com. Eng., clink. Ger., *klingen*, *klingeln*. Br., *cloc'h*. Fr., *cloche*.

1,430.—**Boue de Clanque.**—R. See 1,429.

1,431.—**Clanque Point.** See 1,429.

1,432.—**Hannaine.**—B. Br., *han*, particular; *naine*, different.

1,433.—**La Platte.**—R. "The flat rock." A term applied to several rocks in the Channel Islands. See 45, 391, 1,154, 1,265.

1,434.—**West Cliff.**

1,435.—**Hannaine Ledge.** See 1,432.

1,436.—**Founnais.**—R. Br., *foun*, abundant, thick, substantial. See 563.

1,437.—**Ozard.**—R. The name of the Alderney pilot who was on board H.M. Sounding Ship *Speedy*.

1,438.—**La rouge falaise.**—Cl. "The red cliff."

1,439.—**La vieille Jetture.**—Perhaps a corrupt form of "jetteuse." See 947.

1,440.—**Roberge.**—A family name.

1,441.—**Crête es Coques.**—Cl.

1,442.—**Chimney Houguez.**—Cl. Houguez, an Alderney name.

1,443.—**Giffoine.**—Cl. Br., *giff*, *guff*, hole; *ine*, between.

1,444.—**Trois Vaux.**—V.P.B.R.—"The three valleys." An appropriate term. See 1,424. The rocks near the Point are called, "Boues des Trois Vaux."

1,445.—**Garden Rocks.**—These rocks are connected with the following:—1,446, 1,448.

1,446.—**La Dame des États.**—See 111.

1,447.—**La boue des États.**—R. See 111, 546.

1,448.—**Les États.**—R. See 111, 546, 1,447.

1,449.—**Le Puits.**—Cl. B.

1,450.—**Aiguillons Etac.**—Br., *tas*, *das*, heap. See 29, 107, 111, 1,537. Com. Sp., *aguja*. Fr., *aiguille*. The Needles are three well-known pointed rocks in the Isle of Wight.

1,451.—**Les boues des Puits.**—(Ledge.)

1,452.—**Escaliers Galeaux.**—Cl. Kel., *gal*, hard, strong. Com. Fr., *galet*. See 1,399.

1,453.—**Les dégrés.**—Cl.

1,454.—**Fossé Malières.**—B. Br., *mail*, *mal*, mutilated, broken; *mala*, to grind. Com. W., *mal* = Lat., *molitura*, *tritura*. Lat., *molere*. Gk., *mulein*. Heb., *mul*.

1,455.—**La tête de Judemare.**—Cl. P. Kel., term. "The place where the sea makes a noise. Br., *iudal*, *iuzal*, *iual*, *yudal*, *judal*, to yell from afar and with effort. W., *udo*, *uwdo* = Lat. *ululare*. W., *wylo*, to wail. Com. Heb., *ialal*, *alal*. Ar., *walula*. Syr., *ālel*. San., *ululis*, *ulukas*. Gk., *alalazo*, Eng., *yell*, *howl*, *wail*. Ger., *hallen*, *gellen*, or *gällen*, to sound loudly. Gael, *ual-lam*. Fr., *hurler*. *Mare* is simply "sea." Br. W., *mor*, *môr*. Lat., *mare*. Fr., *mer*.

1,456.—**Le Tac à Ribbon.**—Cl. R. *Tac*, heap. See 111, 1,450, 1,537. The cliff has stripes of reddish rocks of different shades.

1,457.—**Mont Robilliard.**—R. This rock has the appearance of a man.

1,458.—**Aiguillons or Needles.**—R. See 1,450.

1,459.—**Orbouée.**—R. Br., *or* or *hor*, our. *Bouée*, hidden or sunken rock. See 12 (Guernsey Section).

1,460.—**Boues des Orbouées.**—R. See 1,459.

1,461.—**Coupé.**—R. This rock is sometimes called "the cocked hat," which it somewhat resembles in appearance. N. Fr., *coupot*. Fr., *coupeau*. O. Fr., *cope*. Sp., *copete*, top, summit. O. Fr., *coupé*, cocked = Fr. cocu.

1,462.—**La pierre au Vrac (or Vraic).**—R. N. fr., *vrac*, wrasse or rock fish; *vraic*, sea-weed. Br., *varec'h*. N. fr., *vrecquier*, to gather sea-weed. Br., *frega* = *vreka*, to rend. In this latter case "dangerous rock." It is said the rock looks like a boat.

1,463.—**Le Puits Jervais.**—P. Br., *gwero'h*, green, bitter, dangerous. W., *gwerh*.

1,464.—**Foulère or Telegraph Bay.**—The telegraph cable was laid here. The word *foulère* seems obscure. I have seen it spelt (Fouleur?) The Kel. root *foul* means large, great. Com. Fr., *foule*. *er*, "noise, din, crash," but also "rock."

1,465.—**Au Foulère or Fouleur.**—Cl. See 1,464.

1,466.—**Tac à Fourgier.**—Cl. Br., *foure'h*, forked. See 94, 111, 546.

1,467.—**Les Joints.**—R.

1,468.—**La Fourchie.**—R. See 94, 1,402. The name is given to several rocks in the islands.

1,469.—**La Nache.**—R. I think "La Nache" and "La Fourchie" are called "the Sister Rocks." Br., *nac'ha*, to deny, avoid, refuse. W., *nâg*, denial; *nagu*, to deny, hinder. Com. Lat., *negatio*. Perhaps "hidden rock," or "obstacle." "Rock that is to be avoided."

1,470.—**Joyeux.**—R.

1,471.—**Les noires Putes** (inner and outer).—R. Br., *put*, bitter, disagreeable, dangerous. See 1,320.

1,472.—**Talleur.**—R. An obscure word, however. Br., *tal*, front, face, *talur*, *talerw*, extremity of furrow.

1,473.—**Coque Lihou** (inner and outer).—R. More than one meaning can be applied. "Mass of shells and sea mire." "Mass of shells in the water." N. Fr., *coque*, sea shell, see 538. The whole expression may be a corrupt form of Br. *kok-loa* = Fr., *écumoire*, *cueiller à pot*. As the sea rushes and foams between the two rocks, the term is very appropriate.

1,474.—**The Lover's Chair.** / **Chaise à l'Emauve.** / **Querre à la Mauve.** } Cl. The following legend of the Lover's Chair is taken from Guerin's Almanack. "Many years ago, when knights were clad in glittering armour, there lived in Alderney a lovely maiden of honourable parentage, but poor. In the island of Guernsey dwelt a Governor, rich, proud, and overbearing, who had an only son. This son happened to come across the lovely Marguerite, and fell at once in love with the child-like face. The old story ever new began, the love was reciprocated, stolen interviews were given, and the Lover's Chair was the place of rendez-vous. News came to the stern father's ears, and the son was forbidden on pain of the last penalty to see Marguerite. Of no avail: love proved stronger than parental will, and the Lover's Chair meeting still continued. One day, Marguerite was secretly followed by armed men, and the two lovers were discovered. Determined not to be separated, they gave each other one long last embrace and then boldly standing on the verge of what is now the telegraph cliff, took together the fatal leap in the seething waters below. Hence the name of Lover's Chair. The term "Querre à la Mauve," means no doubt "the sea-gull's chair or resting place," but in Babington's Floræ Sarnicæ, and Marquand's Flora, we find the form "Cheise à l'Emauve" Br., *lem*, pointed, sharp. W., *llymm*. W., *llymhau*, to sharpen. Com. Heb., *lehem*, *laham*, *lahab*, a wave, and Lat. *lima*, *limare*, *lamina*, also Fr., *lame*. Gk., *limos*, hunger, that which whets the appetite seems very much allied to the Kel. term. The Kel. term *em* means separated, and *a-ve* is simply the subs. verb *is*.

1,475.—**Boue des Coques.**—R.

1,476.—**La Noire.**—R.

1,477.—**Bonit** or Bony. } R. Kel., *bon*, limit, but *bony*, cone.

1,478.—**Le Pignon.**—Cl. "Elevated." Br., *pignat*, *pignal*, to mount up. Com. W., *pig*, point. Sp., *pena*, rock. Eng., *pen*. See 36, 1,048.

1,479.—**L'Etac de la Quoire.**—R. *Etac*, stack, heap, see 111, 546, 1,447, 1,537. *Quoire* is possibly "singer."

1,480.—**Les Pignons.**—R. See 1,478.

1,481.—**Têtes des Nègres.**—Cl. These heads of rocks on shore appear like heads of negroes.

1,482.—**L'Etac du Sud.**—R. See 111, 1,479.

1,483.—**Les Becquets.**—R.P. "The pointed rocks." Br., *beg*, *bek*, point; *begeg*, pointed. Com. W., *bechyn*, little hook. The Kel. root appears in *becchue*. See 456, 894.

1,484.—**Le vallet au Fléaume.**—V. Vallet = possibly *vallée*. Br., *fleau*, *flem*, pointed. W., *flaim*, point.

1,485.—**La pointe au Fléaume.**—See 1,484.

1,486.—**La baie au Fléaume.**—See 1,484.

1,487.—**La Tehue.**—P.R. Br., *tec'huenn*, cliff. N. Fr., *tehue*, lit, vat, tub. The expression may mean in Fr., "partie reculée."

1,488.—**Ma boue.**—R.

1,489.—**Rousset.**—R. See 349.

1,490.—**Rocque pendante.**—R. Cl. "The hanging rock."

1,491.—**Queslingue.**—R.P. Kel., "Narrow passage." *Ques* = Fr., *gué*. *Ling*, narrow.

1,492.—**Longy Bay.** / **Baie du Câtel.** } *Longy* seems to be derived from a root meaning to engulf. Br., *lonca*. W., *llwngc*. Ir., *slogigh*. Com. Heb., *luang*. The name "Baie du Câtel" seems appropriate as Essex Castle lies above.

1,493.—**L'île au Raz.**—I. "The islet of the Race of Alderney." N. Fr., *raz*. Ic., *raz*, strait with a rapid current. Br., *raz*, *ratz*, strait, narrow passage with a rough sea. Several of these exist on the coast of La Hague as well as on that of Brittany. *Raz* in Br. has also the meaning of a sort of lime composed of stones and burnt shells.

1,494.—**Les Bouffresses.**—R. Fr., *bouffer*. Sp., *bufar*, to swell. See 194, 284.

1,495.—**La Retrière** or Retriève. } R. If the word has a Kel. derivation it may mean "motionless." *Ret*, however, means "current that passes over"; *ère* is simply rock.

1,496.—**La Connel.**—B. Kel., *con*, angular.

1,497.—**Blanchard.**—R. See 1,264.

1,498.—**Baie du Grounard.**—Perhaps "spot where the sea roars." N. Fr., *grounnaïr*. Sp., *grunir*. It., *grugñire*. Lat., *grunnire*. Provç., *gronhir*. Br., *greunna*, to groan. On the other hand N. Fr., *grounard*, red gurnard, *trigla cuculus*.

1,499.—**Brinchetale** (Ledge).—I have seen the word spelt "Brinchetard." Br., *brenc'het*, chief, first; *etai*, also. Br., *bryn*, *bren*, *bre*, mount, islet. W., *bre*, peak, mount, hill. Br., *brin*, island. W., *bryncyn*, clod, little hillock.

1,500.—**Le Houmet Herbé.**—R.P. N. Fr., *houmet*, holm, rock. See 166, 138, 653, 713. Br., *herbé*, bitter, dangerous; *jerbé*, *ierbé*, haunt of the bird. W., *chwerv*, bitter.

1,501.—**Houmet Point.**—See 1,500.

1,502.—**St. Esquard Bay.**—See 1,503.

1,503.—**Esquard** or Esquerre. } R. Somewhat obscure, however, *quard* seems to imply set aside, neglected; *querre* may mean rock. The root is found in *equervelle* or *equerbelle*, *lavouquèrre*, *plaquère*. See 200, 296, 491, 1,272.

1,504.—**Quesnard Point.**—Perhaps der. from *gwen*, white; the latter part of the word if Kel. would signify "spot."

1,505.—**Quesnard.** / **Behera.** } R. See 1,504. Br., *beher*, overloaded.

1,506.—**Des Rumes** or Runes. } R. If Kel., the word would signify "hillock," but I am inclined to give it an O. Fr. derivation, *desroyée*, from *derotare*, *desroi*, *dessaroi*, to irritate, upheave, confuse. O. Fr., "*La mer desroyée*." "The furious sea." O. Fr., *desruement*, hasty movement. Com. N. Fr., *derumaïr*. *Déruner* is used in Calvados.

1,507.—**Smuggler's Creek.**

1,508.—**Homeaux Florains.** / **Liverpool Rock.** } B. N. Fr., *homeaux*, pl. of *houmet*, see 1,500. This islet was at one time covered with wild flowers before the Fort was built. The *Liverpool* was wrecked on the rock in 1902.

1,509.—**Sauquet.**—R. Br., *sau*, elevated or hard; *quet* = simply Fr., *gué*, passage.

1,510.—**Cat's Bay.**

1,511.—**Herfey.**—R. Possibly a Kel. term. Br., *herv*, green.

1,512.—**Vaux Tremblières.**—B. *Vaux*, pl. of *val*, valley. See 1,424, 1,444.

1,513.—**Latunes.**—R. Perhaps O. Fr., *lastes*, blow, or struck.

1,514.—**Corblets.**—P.B. Br., *cor*, point. W., *cor.*, point, dwarf. Br., *bled*, stone; *pleg*, bend; *plega*, to bend W., *plyg*, double, fold. Com. Lat., *plico*. Gk., *pleko*. Sp, *plegar*. Heb., *palac*, flexible, pliable.

1,515.—**Platte.**—R. See 1,433.

1,516.—**Boutier.**—R.

1,517.—**Allen's Point.**

1,518.—**Chateaux.**—R.

1,519.—**Chateaux à l'Etoc.**—P. Otherwise spelt "aletoc." There is an old Kel. word *toc*, which means "sharp, sudden sound." See 224, 247.

1,520.—**Les Boues briées.**—R. "Reddish, variegated rocks." Br., *briheenn*, *breiz*, *bris*, *breth*, *brith*, pied, speckled. W., *brith*, *braith*, variegated, dappled. *Britho*, to variegate. See "Bretagne Uset, 1,064." However, O. Fr., *brie*, noise, tumult, struggling.

1,521.—**Grois Ledge.**—Two meanings are applicable, "Sunburnt" or "middle." Br., *creiz*, *craiz*, *greo*, middle. W., *yngres*, *yncres*, middle or among. Com. Ir., *cri*, heart Br., *groez*, *grouez* or *groes*, fire. W., *gucres*, heat, warmth.

1,522.—**Lion's Head.**—P.

1,523.—**Citta de Barri.**—R. The name of a vessel that touched this rock.

1,524.—**La Donnette.**—B.R. Br., *down*, deep; *douna*, *dounea*, to deepen. Ir., *dein*, deep.

1,525.—**Baie de Saie** or **Saye.** Br., *sahe*, *saie*, top, crest. *Sahez*, *sāez*, *sdez*, *schaz*. W., *sueth*. Heb., *hheth*, arrow. Com. Lat., *sagitta*. Ir., *seid* Sp., *saeta*. It., *saetta*. O. Fr., *sagette*, *sayette*.

1,526.—**Homet des Pies.**—N. Fr., *homet*, isle, holm. See 1,500, 1,508.

1,527.—**Alguillons** (Ledge).—See 29.

1,528.—**Bibette.**—P.B. Perhaps der. from Br. *bivet*, *biwic*, living.

THE CASKETS, ORTACH, AND BURHOU GROUP.

1,529.—**Pommier Banks.**—Perhaps "difficult passage." These two extensive and dangerous groups of sunken rocks lie on the Western side of the Ortac channel and are divided by a narrow 12 fathoms channel. See 1,424.

1,530.—**Les Casquets.**—R. English sailors call this "the cascades." In connection with this meaning com. the following note from Metivier's Dict., "*Casus rupes*, et son représentant français *Casquet*, indique l'écueil, le rocher de la chute des eaux, en anglais nautique *Overfall Rock*, allem. *Wasser-fall*. La ressemblance de plusieurs autres *Casquets* inscrits sur la carte aux alentours du Calvados pourrait confirmer l'explication que voici. *Casus rupes*, aujourd'hui *Casquet*, vient du Lat. *casicare*, ou *casare*, tomber incessamment, selon Plaute, ang., "to tumble, to reel." Ce *casare* est, en effet, l'origine approuvée, moyennant le diminutif *casicare*, d'où l'it. *cascare*, et le fr. *cascade*, chute d'eau perpétuelle. On sait d'ailleurs que le *cascaret*, cet amas d'eaux qui refoulant celle de la Garonne à son embouchure, engloutit quelquefois tant de frêles embarcations est un mot dérivé de la même source romane." Com. It., *cascata*. According to "Channel Islands' Pilot," these rocks are so named on account of their

remarkable helmet or cap-like appearance." Br., *casquet*, helm. Another Kel. derivation is possible. Casquet may be a contrast to Renonquet, 1564. Br., *Kas-kuit* or *Kas-cuit*, contrasted with *Renon-kuit*. *Kas-kuit*, lit. "to send away," hence to be distant. *Renon-kuit*, lit., to send near, hence to approach. The Casquets are the most distant rocks from the West coast of Burhou and Alderney; Renonquet is much closer. The term *quet* = often Fr., *gué*, passage, see 1,509.

1,531.—**Point Colotte** or Colette. } Br., *koll*, lost, hidden, dangerous.

1,532.—**Touraille.**—R.

1,533.—**Brequette.**—R. Perhaps "vrequette," "covered with sea-weed," or "breaker." Br., *frega* or *vrega*. See 1,566.

1,534.—**North Landing.**

1,535.—**Point du Nord.**

1,536.—**Biblet.**—R. Br., *bib*, lit., peppery, hence no doubt, "bitter, dangerous."

1,537.—**L'Etac au Guilmet.**—R. This name is found in an ancient map. *Etac*, heap, see 111. Com. also O. Fr., *estaque*; Sp., *estaca*; Ic., *stakk (r)*; Dan., *stak*; Sw., *stack*; Br., *gwel*, to see, *met*, solid. Guilmet might be intended for Goulmet. Br., *goul*, *coul*, "in a border," or "flat." Com. W., *ymylu*, border; Br., *coulm*, knot; *coulma*, to tie, knot. W., *cwlm*, *cwlwm*, knot. Com. Gk., *kolūma*, obstacle. Br., *coulm*, pl. *coulmet*, *goulmet*, pigeon or sea-gull. Com. W., *colomen*. Lat., *columba*. Fr., *colombe*.

1,538.—**Triton.**—R. The Trinity boat *Triton* touched this rock, hence the name.

1,539.—**Billy's Point.**—R. One of the keepers of the lighthouse named Billy found this point for fishing.

1,540.—**Nickt.**—R.

1,541.—**L'Auguière.** **L'Auquière.** **L'Octière.** **Octière.** } R. This word has four different forms. Br., *au*, water, *querek*, *kerek*, rock, "water rock." The same root appears in Avouquère, see 200, 491. Br. *loc*, *lok*, *log*. W., *lloc*. Lat., *locus*, spot, place. Com. Fr., *local*. Br., *iar*, *ier*, bird. "Bird rock."

1,542.—**Noire.**—R.

1,543.—**Stella** or **Noire.**—"The *Stella* or Black Rock." The spot where the *Stella* was wrecked on the eve of Good Friday, 1899.

1,544.—**Rock Ledge.**

1,545.—**Petit Havre.**

1,546.—**La Fache.**—R. "In front." Sp., *facha*. It., *faccia*, from Lat. *facies*. Com. Fr., *face*, Eng., *face*. *En facha*, N.T., "the wind blowing in front. On the other hand *fach* is a word of provç. origin and is used in Fr. and Br., in the sense of irritating. In the latter case "a spot where the sea beats furiously."

1,547.—**Little Casquet.**—R. See 1,530.

1,548.—**South Landing.**

1,549.—**Black Prince.**—R.

1,550.—**White Ship.**

1,551.—**Fourquère.**—R. Perhaps another form of "Fourchie," see 94. The Kel. root, *querre*, or *er*, *ere*, signifies "rock." See 1,503.

1,552.—**L'Equet** or Le Quest. } R. "Without passage." It is well known that the Ortac passage is very dangerous and rarely used.

1,553.—**Ortac** or Ortach. } This large rock, formed like a hay-rick, lies between the Casquets and Alderney. Br., *or*, *hor*, "our," or

"door, opening." The term *tac* means "heap," as l'étac, l'étacré." See 111, 1,537.

1,554.—**Guilliamart.**—R. This word is obscure, but Br., *guel*, hard, and *gicel*, visible, and the term *art*, hard, solid.

1,555.—**Northern Rock.**

1,556.—**Little Ortac.**—R. See 1,553.

1,557.—**Cormourant.**—R. Probably "cormorant rock."

1,558.—**Frette.**—See 661 and the same in Addenda.

1,559.—**Verte Tête.**—P.R.

1,560.—**Cone Rock.**—This rock is of sugar-loaf form.

1,561.—**L'Aiguillon de la Frette.**—R. See 29, 107, 661.

1,562.—**Speedy Rock.**—This rock was discovered by H.M. Sounding Ship *Speedy*.

1,563.—**Noire.**—R.

1,564.—**Renonquet.**—R. Br., *renon-kuit*, to approach. Renonquet may be contrasted with Casquet. See 1,530.

1,565.—**Crabblot.**—R. Br., *crab*, pointed.

1,566.—**Vregies.**—R. Possibly from a root signifying "to rend." Br., *frega;* Lat., *frango;* Gk., *regnumi;* It., *frangere;* Eng., *wreck;* San., *rang*, *ragami;* Ger., *brechen.*

1,567.—**Mars.**—R.

1,568.—**White Rock.**

1,569.—**Vieux Cabblo.**—This might be another form of Crabblot, 1,565, but Br., *cab*, very strong, solid.

1,570.—**Vergies.**—R. See 1,566.

1,571.—**Les Aiguillons du Nord.**—R. See 29, 107.

1,572.—**Bouchard.**—R. Br., *bouc'h*, obstacle, difficulty. Com. Fr., *bouchon*, *boucher.*

1,573.—**Mackerel Rock.**—Perhaps to be taken lit. See, however, 395.

1,574.—**Round Rock.**

1,575.—**L'Emproué.**—R. Probably Kel. Br., *em*, *proué*, lit., to skid.

1,576.—**Great Nannel.**—R. *Nannel* may mean "elongated," or perhaps, "not very dangerous. The word is said to be a shortened form of *niannaisses.*

1,577.—**Little Nannel.**—R. See 1,576.

1,578.—**La Pierre de But.**—R.

1,579.—**Les Grimons** (outer and inner) —R. O. Br,, *grim*, lit., wild. The Kel. root seems to give an idea of bitterness or crying. Br., *grigonça*, to gnash the teeth. W., *grygnian*, to grunt; *rhiccian*, *rhingcian*, to creak. Br., *rhingo*, *rhincyn*, shrill, whizzing. Ger., *greinen*, cry. Com. Fr., *cri;* Br., *gri.*

1,580.—**Le Cordonnier.**—R. A shoemaker ran his boat aground on this rock.

1,581.—**Grand Monteaur.**—R. No doubt corrupted from the Fr. "climbing."

1,582.—**L'Equet.**—R. See 1,552.

1,583.—**Simmel.**—R.

1,584.—**Burhou.**—I. The Kel. term, *bur* = Fr., *pur.* *Ou* = holm in many instances. "Washed or purified spot." Com. Burons, 1,257 (Sark Section). However, Br., *burhou* or *murou*, obstacle.

1,585.—**Les Parquets.**—R. See 1.240 (Sark Section). Perhaps "flattened," lit., "arranged for an abode."

1,586.—**Alegant.**—R. Perhaps another form of Alligande, 1,336.

1,587.—**Tourlatte.**—R.

1,588.—**North Rock.**

1,589.—**Noir Houmet.**—R. N. Fr., *houmet*, rock, holm. See 653.

1,590.—**Burhou Creek.**—See 1,584.

1,591.—**Le Teaur.**—R.

1,592.—**La Logue.**—B. Probably "Lague." See 385 and Addenda.

1,593.—**Little Burhou.**—R. See 1,584. The western part of Burhou is cut off from the main part at high water.

1,594.—**Burhou Reefs.**—See 1,584.

1,595.—**La Boue des Kaines.**—R. Br., *kein*. N. Fr, *caine*, ledge. See 277, 476.

1,596.—**La Haise des Jois.**—Br., *haise, hesse*, precipitous.

1,597.—**La Longue.**—R.

ADDENDA ET EMENDANDA.

16.—**Le Creux à Tarre.**—This might be taken lit. "Tar cavern."

29*a*.—**Bec à la chièvre.**—This name appears in "Folk Lore," lately published. The meaning is "point of the dog rock." Br., *ki* or *chi*. W, *ci*, dog, *evre*, or simply *ere*, rock. There seems to be an affinity between Kel. *ki*, dog, and Heb. *qia* Ar., *kahaia*, to vomit, cast forth. W., *chwyd*. Com. Prov., 2 Epistle Peter ii., 22. "The dog returns to his vomit," but Br., *kevre, c'hevre*, tie, bond. In this case the expression signifies "Point of the bond or band."

30.—**Fermain.**—B. Métivier says Fermain and Icard (169) are names of individuals.

34.—**Le Hérichon.**—R. Com. also Lat., *ericius*. It., *riccio*. Br., *hureu-chin, hericin*.

36.—**La Roque au Pêgne.**—R. Com. Heb., *pinna*, corner, angle, pinnacle. O. Fr., *penne*. Lat., *penna*. Eng. and W., *pen*, point.

43.—**Bec du Nez.**—C.P. Com. It., *becco*. Sp. and Port., *bico*. Eng., *beak*. If *bec* means stream, Com. Fr., *bac*, passage boat. Ger., *bach*, brook.

53.—**Les Havrets.**—R. O. Fr., *havrer*, to land, hence "landing places."

60.—**La Grune de Divette.**—R. Instead of "La Grune du Divette."

61.—**Les Tierres.**—R. Another meaning may be given. Br. W., *ti*, house. In this latter case, "rocks formed like a house or roof." The Kel. term *er, ere*, means rock. See 1,541.

67.—**La Grande Tangüeuse.**—R. N. Fr., *tangon*. According to Fleury, "Varec en forme de fouet, queue de mer." No doubt the *fucus flagelliformis* of botanists. Eng., *tangle*. Ger., *tang*, sea tangle or weed, see 933. However, Ic., *tangi, tanghi*, cape, joint A. Sax., *taengan, tengan*, to dart forth, spring, dash, rush, throw one's self.

54.—**La Contre au Marchant.**—S. *Contre marche*, N.T. Eng., *countermark*. Sp., *contramarcha*. Rus., *contramarchan*, countermarch, retrocession. Lit., to go in a contrary direction. The term is used of vessels that are obliged to tack about or turn round but with the intention of arriving at the original or intended destination.

69.—**Le Clos verrou.**—C. Prov. Le dix Avril le coucou crie s'il est vie. Trans.: On the 10th April the cuckoo sings if he is alive.

76.—**Les Capiaux.**—S. Com. Lat., *caput*, head. *Capéer*, N.T., "To be ahull." Fr., *cingler à la cape*. To sail at the mercy of the wind and waves.

77.—**Les Apotres.**—S. The word seems obscure but Port., *apostar*, to land.

92.—**L'Elin d'Colin.**—P.R. Another meaning may be given. Br., *elin*, *ilin*, lit., elbow. "Dangerous turn or bend." See 154.

114.—**Les Ligants.**—S. N.T., *ligang*, to roll. A. Sax., *ligan* or *liegan*, to lie or be at rest. Ic., *lega*, from *leg*, allied to Lat. *lectus*, place of rest, port, road, and with the Gk. *legein*. To anchor. O. Kel., *lic*, *lig*, to fasten.

115.—**Rbaymonts.**—S. When the sea is rough at "Les grands Ligants," a ship anchored there may be forced to go to "Les petits Ligants," and *vice versa*, consequently *rebaymont* would mean "to return with difficulty." Br., *rebechmont*. Les Rbaymonts is a spot situated within Les Ligants, and the ship returns with difficulty on the opposite side.

117.—**La Draingue.**—R. Ic., *drangr*, allied to A. Sax., *drig*, *droug*, breakers. O. Fr., *dring*. A. Sax., *dringan*, *thringan*, to press. Com. Ger., *dringen*. Eng., *throng*.

121.—**Emouée.**—R. O. Fr., *esmaier*, *—ayer*, *—oier*, *—oyer*, *esmaier*, *esmahier*, to confuse, frighten, trouble. O. Sp., *esmaïr*. Com. Sp., *desmayar*. O. Fr., *esmoier*, *esmoihier* to make a heap. Moie and Emouée seem thus allied to one another.

133.—**Moulin Huet.**—According to Métivier, "Moulin Luet." Br.. *luet*, *luhet*, *luzel*, *luzet*, bright, shining, visible (possibly from the sea). A field in the neighbourhood is still called "Le Luet." Com. Fr., *lueur*, *luire*. O. Fr., *lu*, light W , *luched*.

139.—**La pierre au Ilys.**—R. Kel., *ilys*, spiked sea grass, the *zostera marina* of botanists. See 1,283.

151.—**La Roque du Port.**—R. Two rocks bear this name, "The large Roque du Port" and "The little Roque du Port."

153.—**Le Canuet.**—Cl. Spelt "Camuel" in "Le livre de Perchage du Fief le Roi." Br., *cam*, winding, *uet*, *uel*, elevated.

161.—**Le Terpi.**—R. The Rev. G. E. Lee suggests *tripod* as being the meaning of the expression; he is no doubt right as the rock appears to have three heads.

162.—**La Sevée.**—B. Cl. Br., *sevel*, to mount. This might signify "ascent, slope," with respect to the cliff.

193.—**Le Creux Picot.**—C. Picot, the name of a former Rector of the Forest. He retired here for meditation.

198.—**Menage au Vée.**—R. O. Fr., *mesnage*, *—aige*, *maesnaye*, *mennage*, *mainnaye*, abode.

228.—**Le Théhun** or Thelun. } R. Br., *tëun*, deceit; *tëuni*, to deceive, composed of *tëi*, to cover, and *eun*, *eeun*. W., *iawn*, straight, not curved, exact, correct, hence lit., "round about way from that which is straight." Br., *ecuna*, *cuna*. W., *uniawni*, to straighten. Com. Gk., *euthūnō*. It must not be forgotten, however, that Br. *teun* = hill. See 1,323.

273.—**Le Creux Mahiel.**—Some say this means "cavern of the devil." It will bear that meaning. O. Kel., *mah*, evil, wickedness; *el* or *ael*, angel, spirit. Lit., "cavern of the spirit of evil."

279*a*.—**La pointe du Fourquet.**—R. This rock appears only at very low spring tides. It lies half-way between Les Caines d'Amont (277) and Les Caines d'Aval (301).

281.—**L'Herbé.**—B. Com. Sp., *abrigo*.

282.—**Les Auquets.**—R. See 491, 1,541.

509.—**La Belle Elisabeth** or Lizabeau. } B.R. Named after Lizabeau, a girl of Torteval, who being turned out of the house by her mother, rushed to the cliffs and leapt into the sea with her baby in her arms, and she and her child were turned into the rocks

which now stand there. See "Folk Lore," by Sir Edgar MacCulloch. Note by Editor, p. 147.

328.—**Herpin.**—R. *Herepin* in Br. means devil. However, O. Fr., *herper*, to break, to grapple.

333.—**Le Rué des plains.**—Instead of "La Rué des plains." The word *plain* comes from *planus*, *plan*, flat. *Le plein*, in N. Fr. *Le pl in* means "the flat beach." *Pllain* in N. Fr. signifies "high tide."

334.—**La Parfonde Pointe.**—O. Fr., *parfonde* = Fr. *profonde*, deep. See 1,377.

349.—**La Roussette.**—R. The term is appropriate; the rock seems variegated. Br., *roussard*. Fr, *roussâtre*, reddish, variegated.

370.—**La Silleresse de la Varde.**—R. P. Instead of "Le Silleresse de la Varde."

385.—**La Lague.**—B. Com. Sp., *laguna*, *lago*. A. Sax., *lagu*, water, sea. Gk., *lakkos*, pit, pond. Sc., *loch*. Fr., *lac*. Lat, *lacus*. Eng., *lake*. However, *lag* in Ic. means "the ebb and flow of the tide; it might be so in this case

411.—**Le Péron.**—R. O. Fr., *perré*, from L. lat., *perreria*, beach covered with stones and pebbles. *Perrail*, formerly *perroy* in Fr. O. Fr., *perroi*, *perrole*, beach; *perron*, *pierron*, large stone.

426 —**Le Tortepec.**—R. Lit., "deformed or crooked point."

437.—**Le Héronné.** R.
438.—**La Héronelle.** R. } Br., *her*, its; *ounes*, current, rapidity.

448.—**La boue Féron.**—R.—Provc., *ferir;* Lat., *ferire*. N.T., lit., to bend a sail to the yard, also to touch, run aground with the prow. *Inferire* means to chain.

450.—**La boue Pâté.**—Sp. Port, *pata*, palm of an anchor.

458.—**La boue Aligné.**—R. Br., *lignenna* = *al lignen eün*, in a straight line.

473.—**Le Rocher Caunaf.**—R Perhaps *caunaf* is intended for *cannaf*, to beat, dash against. "Rock against which the sea dashes."

492.—**La boue Attrappée.**—R. Fr., *attrapper*. N.T., to seize, arrive. Attrapper un mouillage, to come to an anchor.

503.—**L'Aiguillon du Lit Herri.**—R. Br., *lit* is the Lat. *alga*, sea-weed; *herr*, "long" or perhaps "blow." Com. Fr., *heurter*. O. Fr., *lit*, heap, *liter*, to coat.

511.—**Torquetil.**—R. Br., *torghen*, elevated. According to Le Pelletier: "Montagne, motte de terre, butte, rupture de la continuité de la terre, coteau escarpé, place d'une terre qui a croulé ou qui est éboulée." Br. W., *torr*, rupture. W., *torgest*, rupture. The latter part of the word seems allied to the Gk. *gē*, land.

537*a*.—**La pointe du Déhusel** or de De Hus, or de Te Hus, or de Tu Dus } This was accidentally omitted in the Guernsey Section. The meaning seems to be "Point of land that seems to hang above." 1 Br., *de*, *te*, spot; *el*, dim. of *ael.*, elevated point. Com. Ch., *el*, above. Br., *hus*, above. Br., *tehi*, *tei*, to cover. W., *toi*, to cover or roof. Com. Ger., *dach*, roof; *decken*, to cover A. Sax, *th ccan*, to cover or thatch Ic., *thak*, roof. Lat., *tego*. Eng., *toga*. Gk., *tegos*. San., *sthag*. 2. Br., *teüs*, *theüs*, goblin, phantom; *toez*, pl. *teusiou*, phantom. *Teüs* seems allied to the Heb. *thohou*, lit, "that which is not." Com., the following note in Métivier's Dict.; "*Dehus*, *d'hus*, *tehus*, *t'hus*. Monument funèbre, préhistorique, ainsi nommé de TEUS ou THEUS, fantôme, spectre nocturne dont il était le repaire, selon les bonnes femmes du moyen âge.

Br., *Teus*, *Theus*, pl. *Teuset*, *Teusiou*, de *Teusia*, s'évanouir.

En Brétagne *le Theusig* ou *dehuset* est un petit homme noir qui danse autour de ce qu'on appelle aujourd'hui *cromlech*. Chez les Norses le *Thus* était un géant.

A quelque distance de la Pointe au Normand, dans les environs de l'paradis selon la Pouquelaie de Dehus, un *Déhusel* ou *Th'usel*, dont les ruines n'existent plus est aussi l'origine du nom d'une anse ou petite baie, près de l'Erée."

Com. also the following note from Le Pelletier's Br. Dict.: "Dans l'inscription de Chyndonax trouvée à Dijon, et représentée dans le second Tome, part 2, page 431 de l'Antiquité par D. Bernard de Montfaucon, ne pourrait-on point lire *dusioi*, au lieu de *lusioi*, qui étaient, dans l'idée, et selon les superstitions des idolâtres, les esprits gardiens des cendres des morts? Le changement est leger, et ce serait notre *Teus*, et les *Dusii*, de Saint Augustin."

552.—**Le rocher Nault.**—R. Perhaps from a N.t., in It., *naulo*. Gk., *naulochos*, shore, port. "Shore rock."

591.—**La Roche de la Graive.**—R. Instead of Le Roche de la Graive, *graive* = *grève*.

619.—**Les Coignets.**—R. The expression may mean "the corner rocks." Br., *coignec*, corner, angular.

633.—**L'Essart.**—In Serk *essart* means a stream.

639.—**Le rocher au Neveu.**—R. *Neveu*, perhaps "trough," from Br. *nevion*, *nefiou*.

661.—**Les Fretes.**—Perhaps "passage, strait," from Lat. *fretum*, *fretus*, der. from *fervere*, to be in a ferment, to be agitated, to rage. Com. Gk., *thermos*. San., *gharma*. Erse, *garaim*, I warm. Eng., *warm*. The term is very appropriate as it is well known the sea is rough in that spot. See 1,588.

665.—**Dos d'Ane.**—Possibly Fr., so named from the shape.

669.—**Caûbo.**—B. Métivier says a "Coët Bo" exists on the coast of Brittany. Br., *coat* or *coet*, wood; *bo*, bay. "Bay of the wood."

693.—**Pildras.**—R. *Pildrap*, pilot cloth. The inhabitants give this meaning. I am indebted to Col. A. H. Collings, H.M. Receiver, for the information.

712*a*.—**La boue a l'œuf.**—Omitted in the previous list.

716.—**Saline.**—B. Another meaning may be given. Br., *sal*, leap; *sala*, to leap, rebound. Com. Lat., *salio*. Fr., *saillir*, see 1,407. Heb., *salal*, *zalal*, to wave or shake, scatter about. San., *sal*, to agitate. Gk., *zale*, *salos*, *thalassa*. Lat., *salum*.

727.—**Port Infer.**—Another form seems to be "Etre Infer," according to Métivier. He says that a family of that name lived at the Castel. *Être*, in O. Fr. *ester*, or *estier*, means "a canal where the tide ebbs."

735.—**Les boues de Braine.**—R. Perhaps "rock with an opening," or "saddle rock." Br., *dibrin*, to saddle. Br. W., *dibr*, saddle. Br., *dibrenna*, to open; *dibri*, to eat. In the latter case, "broken rock." Com. W., *brie*, cut.

748.—**Les Pêqueries.**—B. Com. Sp., *pegar*, to join, close two things. See 1,152.

749.—**La Jubert.**—R. Com. Eng., *jabber*. Sc., *gabber*. Eng., *gabble*.

750.—**Les Falêtières.**—R. N. Fr., *faîtière*, roof. "Rocks formed like a roof. This meaning may be correct. See 61 (Addenda).

780.—**Les Hoffez** or Offez. } There may be some connection between this word and A. Sax. *off*, whence *offing*, the high sea.

789a.—**La Rocquaize** or Rocrais, or Rocraise. } R. This name was omitted in the first Section Br., *hesse*, *haiss*, steep, dangerous. "Precipitous rock," see 49, 152. If we take the

second form, the word means "middle rock," no doubt with respect to Grand Havre. Br., *roc'h*, rock; *kreis*, middle; com. Ir., *cri*, heart.

797.—**La Jougane.**—R. Br., *zougea*, formidable; *jaoga*, *chaguein*, to chew, crush. No doubt "Dangerous rock."

814.—**Les Amarreurs.**—B. Com. N Fr., *amarrāïr;* Br., *amarra;* Sp., *amarrar*, to fasten.

817a.—**Le Camp Rouget.**—B. Omitted in the first Section.

819.—**Les Tangeriaux.** See 67. (Addenda). The Kel. term *ian*, means rock.

822a.—**Pezerie.**—B. This small bay was omitted. See 368. Com. Fr., *piece;* Sp., *pedaço;* It., *pecia*, all der from Heb., *pes*, *peth;* com. W., *peth*, part; Ger., *bisschen*, little bit; Heb., *pissa*, piece; *path*, portion; Ch., *pas*, fragment; pl., *passim*.

836a.—**La Corbière.**—Another name which had been omitted. See 245.

The following names were omitted between 883 and 897:

Le Pouillier.
Pointe du Nord.
Pointe de la Lande.
Fontaine es Bœufs.
Les Mares à Fils.—B.
La Croix Besnard.
La Pointe Homtole.—See 881.
La Haute Banque.—See 566.
La Moulière.—R. See 140.
Le Plat Rocher.
Miellette.—B. See 1,312.
La Pointe du Norman.
Le Houmet Paradis.—See 1,589.
Les Petits.—B. See 310. O. Fr., *pestel*, crushing.
Le petit Houmet Benêt.—R. See 893.
Les Moines.—R. This may have a Kel. origin. Br., *moeign*, stone, hard substance.

865.—**Le grand Braye.**—R. See 1,396.

933.—**Le bateau au Tangon.**—R. See 67 (Addenda).

963.—**Le Rocher Puant.** } R. Com. O. Br., *flaeryus*, offensive to the
964.—**Le Rocher Fieâtre.** } smell.

977.—**Draout.**—R. An alternative meaning may be given. Br., *dra*, *tra;* W., *tra*, thing; Br., *aôt*, *aôd*, *ôt*, *ôd*, shore. "Shore rock"

1,011.—**La pierre Carré.**—R. O. Br., *quarré*, square.

1,017.—**Le Merde Haise.**—R. Br., *merdi*, *merdea;* W., *mordywo*, to navigate

1,022.—**Conchée.**—R. Com. O. Fr., *conchiement*, filth; *conchier*, *cunkier*, *concier*, *cuncier*, to defile.

1,031.—**La Pointe du Château** (des Quénévés). *Qué*, ford; *neves*, new.

1,053.—**La Baie du Clouet.**—Br., *clouer*, sea-weed with large pods or seeds.

1,063.—**La pierre de Beurre.**—R. N. Fr., *buret*, moulting of birds, root *burra*, hair, down; com. Fr., *bourre;* Br., *bourell*.

1,118.—**La Touraille.**—R. Com. *Tyre*, tower, rock. Heb., *tsur;* Ch., *tur;* Syr., *turo;* Ar., *tar*.

1,132.—**Le Nesté.**—R. Com. Eng., *nestle*, to lie close and snug as in a nest. See 1,287.

1,075.—**La pêche à agneaux.**—Possibly der. from a N. t., *agnin* or *agn*, a corrupted form of *agnhin*, wind; *agninini*, a strong breeze.

1,071.—**Le Port Gorey.**—B. The word *gori* has the same derivation as *gor*, ebullition, boiling.

1,077.—**Le Piquillon.** O. Fr., *piquillon*, point.

1,152.—**Les Pegane.**—R. See 748 (Addenda).

1,153.—**Le Tintajeu** or Tintagel. } The O. Kel. term *jeu*, dangerous; *eu*, that which makes a noise. See 331, 1,085. On the other hand, Br., *tin* or *din*, is derived from *tante*, tent, and *tag*, from *taga*, to stifle, bite, kill. Com. Heb., *chanaq*, *tsanaq*, to be pressed, compressed or shut in; Ch., *shanaq*; Ar. and Syr., *chanak*; Eth., *hānāqā*; San., *ang*, press; Gr., *agkō*; Lat., *ango*; Ger., *eng*; Eng., *anguish*; W., *yng*, *angau*, death. Br., *el*, *ael*, angel This is the reason why *tintagel* is said to signify "devil's castle," lit. "tent or house of the spirit that kills or stifles." Br., *tinta*, to prop, to shore up.

1,158.—**Saignie.**—B. I am told the expression means "blood red." The bay is so called from the colour of the upper cliff. The term, however, might as well apply to many other parts of the coast.

1,225.—**La demie au Bro.**—R. *Bro* may mean foam. Com. N. Fr., *brou*, confusion; *berouet*, lather; Ir., *broth*, rush; *bérhüet*, p. part of Br. verb, *berhüein*, from dialect of Vannes.

1,245.—**Le Creux à Chiens.**—So called, as it is said, from two stones at the far end resembling dogs.

1,312.—**La Mielle.**—B. Line 5 instead of "savage" read "ravage."

1,377.—**Parfonde.**—R. See 334 (Addenda).

In conclusion, I wish to acknowledge my obligations to several friends who have kindly furnished me with most of these names. To Mr. Peter Robert, of La Bêlieuse, St. Martin's, I am indebted for the Section extending from Castle Cornet to Icart Point; to Mr. N. Bourgaize for the Forest Section; to Mr. Peter Sarre, Torteval, for the Section extending between Les Thielles and Fort Grey including the Hanois Group; to Mr. E. Le Couteur for the Rocquaine Section; to Mr. N. De La Mare, Mont Saint, St. Saviour's, for L'Erée, Perelle and Vazon; to Mr. G. Le Tissier, for the Cobo Section; to Mr. Gaudion and to Mr. E. Noyon, for the Vale and St. Sampson's; to Mr. T. Falla, for the remaining Section as far as the Harbour of St. Peter-Port; to Mr. John P. De Carteret for Serk, and to Mr. A. A. Allen for Alderney. The Herm Section and many names in the other Sections have been taken from the Admiralty and Andrew Gray's Maps. And I desire particularly to return my sincere thanks to my friend Pasteur Guillaume Le Coat, of the Breton Evangelical Mission, for the valuable aid derived from his ancient Keltic Dictionaries.

THE MOSSES AND HEPATICÆ OF SARK.

BY MR. E. D. MARQUAND, A.L.S.

UP to last year practically nothing whatever was known about the Mosses and Hepaticæ of the island of Sark,—only nine species being on record. That this has been owing to the absence of observers, and not to the poorness of the locality is shown by the following list, from which it is evident that Sark possesses many attractions for the diligent student of these lowly plants.

In the early autumn of 1902 Mr. C. P. Hurst (to whom we are indebted for an exhaustive Flora of the small island of Brechou) started upon the collection of the mosses of Sark, but his researches were unhappily soon cut short by a very serious accident, which he sustained whilst botanising on a precipitous part of the cliffs. Mr. G. Derrick, however, was able to continue the work during his three visits to Sark at different seasons, so that with only two or three exceptions the whole of the mosses and hepaticæ enumerated in the following pages were collected by him. Although Mr. Derrick is not a bryologist, he is a first-rate collector, and he has done excellent work by the indiscriminate gathering of specimens in all kinds of localities where mosses grow; and these he has forwarded to me in a fresh state for identification.

All the hepaticæ so far found in Sark are known to occur in Guernsey; but three mosses (*Pottia crinita*, *Ceratodon conicus* and *Fontinalis antipyretica*) have not as yet been discovered in the latter island, though I have very little doubt that they will ultimately be found. But it is between Sark and Alderney that the most interesting comparisons can be made, by reason of the nearly equal size of the two islands, and at the same time their distance apart of sixteen or eighteen miles. Now, even in the present list, imperfect as it is, there are no less than nine mosses, viz., *Polytrichum formosum*, *P. aloides*, *Ceratodon conicus*, *Bartramia pomiformis*, *Mnium undulatum*, *Fontinalis antipyretica*, *Pterygophyllum lucens*,

Porotrichum alopecurum, and *Hypnum denticulatum;* and five hepaticæ, viz., *Lejeunia serpyllifolia*, *Diplophyllum albicans*, *Plagiochila asplenioides*, *Saccogyna riticulosa*, and *Nardia scalaris*, which have not been detected in Alderney, and I am almost certain that most of these species do not grow there at all.

From the point of view of a bryologist, therefore, Sark appears to be a much richer area than Alderney, and, judging from Mr. Derrick's gatherings, I have no doubt whatever that if both islands were equally well searched, the moss-flora of Sark would equal, if it did not surpass, that of Alderney in the number of species. A little careful research by an experienced bryologist in the early spring and again in the autumn, when many minute and obscure species are in a good state of development, would certainly add many species to the present list.

The moss-flora of Sark, as now recorded, consists of 60 mosses and 22 hepaticæ.

MOSSES.

Catharinea undulata, *Web. & Mohr.* Dixcart Valley. Valley from Creux Road to La Forge.

Polytrichum aloides, *Hedw.* Valley from Creux Road to La Forge.

P. piliferum, *Schreb.* Cliffs at La Moinerie. Vermandez.

P. juniperinum, *Willd.* La Moinerie. Dixcart Bay. Dosdane Cliffs Le Pot. La Vallette. Vermandez. Creux Derrible.

P. formosum, *Hedw.* Dixcart Valley, and cliffs above Dixcart Bay. Valley from Creux Road to La Forge. Grève de la Ville.

Pleuridium subulatum, *Rab.* Furze brake in Dixcart Valley. Field near Dixcart Hotel. Bank at Dosdane. Clos Buret.

Ceratodon purpureus, *Brid.* La Moinerie cliffs. Trois Fontaines. Silver Mines. La Jaspellerie.

C. conicus, *Lindb.* This species was gathered in Sark in September, 1885, by the eminent French bryologist, Mons. J. Cardot, as recorded in the *Revue Bryologique* for 1887.

Dicranella heteromalla, *Schp.* Dixcart Lane.

Campylopus fragilis, *B. & S.* Dosdane cliffs. Vermandez, Little Sark.

Dicranum scoparium, *Hedw.* Dixcart Valley and Bay. Le Pot. La Vallette cliffs. Valley from Creux Road to La Forge.

D. majus, *Turn.* La Vallette. Dixcart Valley. Grève de la Ville.

Fissidens bryoides, *Hedw.* Dixcart Valley. Valley from Creux Road to La Forge La Vallette. Creux Derrible.

F. decipiens, *De Not.* Cliffs at Le Pot, Little Sark.

Grimmia maritima, *Turn.* On rocks at sea-level below Trois Fontaines, and at Port du Moulin; also at Dixcart Bay.

G. trichophylla, *Grev.* Near Creux Derrible.

Pottia truncatula, *Lindb.* Near Dixcart Hotel (C. P. Hurst).

P. intermedia, *Furnr.* Dixcart Bay. Le Pot. Plaisance cliffs. Cliff near Clos Buret. Creux Derrible. Near the Silver Mines.

P. crinita, *Wils.* La Vallette.

Tortula muralis, *Hedw.* On walls at the Boys' School and at Dixcart Hotel. Rue du Moulin. On a thatched roof by the Post Office.

T. lævipila, *Schwgr.* On trees near the mill, and near Dixcart Hotel.

T. ruralis, *Ehrh.* Dixcart Lane. Bank near the Silver Mines.

Barbula rubella, *Mitt.* Near the Silver Mines, Little Sark.

B. convoluta, *Hedw.* Bank near the Silver Mines.

Weisia viridula, *Hedw.* Near Dixcart Hotel (C. P. Hurst). Cliffs at Le Pot. Near the Vicarage. Cliffs above Dixcart Bay.

Trichostomum mutabile, *Bruch.* Dosdane. Coupée. Dixcart Lane. Trois Fontaines. Silver Mines. Creux Derrible. Lower Dixcart.

T. littorale, *Mitt.* Near Trois Fontaines. Creux Belet.

T. flavo-virens, *Bruch.* Port du Moulin. Creux Belet.

Zygodon viridissimus, *Brn.* On trees at the Seigneurie, in Dixcart Valley, and near the Hotel. Fruiting on a thatched roof near the School.

Ulota phyllantha, *Brid.* On trees in Dixcart Lane, and in the Seigneurie Grounds.

Orthotrichum diaphanum, *Schrad.* On a tree at Dixcart.

Funaria hygrometrica, *Sibth.* La Jaspellerie.

Bartramia pomiformis, *Hedw.* Near Dixcart Hotel (C. P. Hurst).

Bryum bimum, *Schreb.* Streamside between Le Fort and Creux Belet.

B. capillare, *L.* Le Pot. La Vallette. Creux Derrible. Dosdane. On thatched roofs at La Moinerie and near the Post Office.

B. atropurpureum, *W. & M.* Eperquerie Common. Wall near Dixcart Hotel.

B. argenteum, *L.* On an earth-topped wall, La Jaspellerie.

Mnium undulatum, *L.* Dixcart Valley.

M. hornum, *L.* Common; specimens sent from a great many localities.

Fontinalis antipyretica, *L.* In a well at Dosdane in 1897, very fine, eighteen inches long. Still growing there in 1903.

Pterygophyllum lucens, *Brid.* Grève de la Ville. Trois Fontaines. Dixcart Valley. La Vallette.

Porotrichum alopecurum, *Mitt.* Dixcart Valley.

Thuidium tamariscinum, *B. & S.* Valley from Creux Road to La Forge. Dixcart Valley. Cliffs above Dixcart Bay Grève de la Ville.

Pleuropus sericeus, *Dix.* On walls, rocks and roofs. La Moinerie. Dosdane. Near Boys' School. Port du Moulin. Little Dixcart. Near Post Office. Dixcart Valley.

Brachythecium rutabulum, *B. & S.* Dixcart Valley. Creux Derrible. La Jaspellerie.

B. illecebrum, *De Not.* Rue du Moulin. Creux Derrible. Dixcart Lane.

B. purum, *Dix.* Common; specimens sent from a great many places.

Eurhynchium speciosum, *Schp.* In the fountain at Dixcart.

E. prælongum, *B. & S.* Common.

E. myosuroides, *Schp.* Trois Fontaines. Dixcart Bay cliffs.

E. striatum, *B. & S.* Dixcart Valley. Cliffs at Le Pot. La Vallette. Trois Fontaines.

E. rusciforme, *Milde.* Port du Moulin.

E. confertum, *Milde.* Dixcart Valley.

Plagiothecium denticulatum, *B. & S.* La Vallette. La Ville.

Amblystegium serpens, *B. & S.* Lower Dixcart Valley. Bank in Dixcart Lane.

Hypnum cupressiforme, *L.* Very common.

H. resupinatum, *Wils.* Clos Buret. Dixcart Valley. Le Pot. Trois Fontaines. La Ville. Near the Vicarage.

H. cuspidatum, *L.* Streamside between Le Fort and Creux Belet.

Hylocomium squarrosum, *B. & S.* Vermandez, Little Sark. Valley from Creux Road to La Forge. Dixcart cliffs.

H. triquetrum, *B. & S.* Valley from Creux Road to La Forge. Grève de la Ville.

HEPATICÆ.

Conocephalus conicus, *L.* Port du Moulin. La Ville.

Lunularia vulgaris, *Mich.* Dixcart Valley.

Riccia glauca, *L.* Bank near the Silver Mines. Garden ground, La Jaspellerie. On bare ground, Clos Buret.

Frullania dilatata, *Dum.* Dixcart Valley, on trees. Vermandez, on rocks. On trees at La Peignerie, and in the Seigneurie grounds.

F. Tamarisci, *Dum.* Eperquerie Common. Creux Belet. Trois Fontaines.

Lejeunia minutissima, *Sm.* On a tree in Dixcart Lane.

L. serpyllifolia, *Mich.* Cliffs at Le Pot. Lane near Post Office. La Vallette. Banks at Dosdane.

Cephalozia divaricata, *Sm.* Recorded for Sark by Mons. J. Cardot in the *Revue Bryologique* for 1887.

C. bicuspidata, *Dum.* Valley from Creux Road to La Forge.

Lophocolea bidentata, *L.* Dixcart Valley. Trois Fontaines. Dosdane cliffs. La Vallette. Vermandez.

Chiloscyphus polyanthos, *L.* La Ville.

Saccogyna viticulosa, *Mich.* Port à la Jument. Dixcart Lane. Trois Fontaines. Dosdane. Le Pot. Vermandez. La Vallette. Valley from Creux Road to La Forge. Grève de la Ville.

Kantia Trichomanis, *L.* Grève de la Ville. Trois Fontaines. La Vallette. La Ville.

Scapania compacta, *Dum.* Valley from Creux Road to La Forge.

Diplophyllum albicans, *L.* Dixcart Valley. Grève de la Ville.

Plagiochila asplenioides, *L.* Dixcart Valley.

P. spinulosa, *Dicks.* Cliffs above Dixcart Bay. Dixcart Valley.

Nardia scalaris, *Schrad.* Valley from Creux Road to La Forge. Trois Fontaines.

Fossombronia pusilla, *Nees.* Trois Fontaines, Little Sark.

Pellia epiphylla, *L.* Little Sark.

P. calycina, *Tayl.* Streamside, Lower Dixcart Valley.

Metzgeria furcata, *Dum.* Dixcart Lane. Dosdane. Near the Vicarage.

SOME POINTS IN THE HISTORY OF THE ORMER (HALIOTIS TUBERCULATA).

BY MR. HERBERT FLEURE, B.SC.

THE ultimate aim of the scientific naturalist is to elucidate the problem "How what is has come to be what it is," and though the solution will never be complete, great steps towards that ideal have been taken, among which one of the greatest was Darwin's production of the "Origin of Species" in 1859. Since then all the biological students' endeavours have aimed at reconstructing the past history of the world of life, a history which, in the case of every type, must be the account of a long course of variations in structure, which have accumulated because they helped the animal in its struggle for existence, or helped it to leave numerous or well developed offspring.

In studying the history of the Ormer we must first know a little of its relations, and these, including the limpet, the *Trochus* or Top-shell, the periwinkles and snails, and many other types, form with it the well-known animal group of the Gastropoda—that is, speaking from the evolutionary point of view, we may call them the twigs of the Gastropod branch of the great genealogical tree of the animal kingdom. Their complete history would start with a description of this "branch" from which the twigs have sprung—in other words with an account of the last common ancestor of the whole group, and would thence trace the adaptations to special circumstances which have led to the appearance of the various distinct types. This ancestral form lived, however, in those very early days when the Cambrian rocks were beginning to be laid down, perhaps,according to moderate estimates, 60,000,000 years ago. It is, therefore, only by more or less probable speculation that we can trace the earlier part of this history.

Fortunately for our purpose, a few twigs still survive which budded not far from the base of the branch; we still have, to use the ordinary phrase, a few very archaic Gastro-

pods. The commonest of these are the limpets (*Patella*, &c.), the ormer, and the slit and the keyhole limpets (*Fissurella*, &c.), while rarer forms include *Pleurotomaria*, whose shells are sold at fancy prices, and a small form named *Scissurella*. In the common types we find various adaptations to a creeping life on the intertidal shore, or in very shallow water; and we may suppose that their common ancestor was settling in this domain, and so possessed that flat creeping foot-sole under the body which gives the name *Gastropoda* to the group.

This ancestor had a cavity above and behind its head, in which were sheltered a pair of gills. This cavity corresponds to the one found behind and below the body of a cuttlefish or Octopus, for these forms, called *Cephalopods*, are related to the Gastropods. The change of position from the cuttlefish one to that above and behind the head, is one of the most important events in the early history of the animals from which the first Gastropods sprung, but its discussion is beyond the scope of this paper. On either side of the cavity containing the gills, the ancestral animal we are discussing must have been fixed to its shell by a shell-muscle, in a manner best understood by thinking of the front end of the well-known horse-shoe shaped muscle seen in the limpet after removal of its shell.

The fibres forming the muscle went down into and formed the main mass of the creeping foot-sole and, when they contracted, they pulled the shell down over the animal. It is probable that the shell of the ancestral Gastropod curled away from the head, though not in quite the same way as in a modern snail.

The shells of some of the earliest Gastropods, the long-since extinct Bellerophons, and of some embryos at an early stage, curl away from the head, keeping always in or near the middle line, so that any such shell can be cut into right and left halves; and it is probable that our imaginary type had a shell of this kind.

The pair of gills, in the gill-cavity above the head were bathed by streams of water which came in on either side, and went out again along the middle line, clearing waste products on their way. This outgoing current, however, interfered with the incoming ones, and its exit from the cavity was hastened by the presence of a slit in the shell rim, such as is found in a Bellerophon, and in the slit limpets, and also, as we shall see later on, in a modified form in the ormer.

From these few details of the external features of the supposed common ancestor of the Gastropods we must proceed to find out along what lines evolution has taken place.

The special difficulty which such an animal would encounter on the intertidal shore is its liability to be knocked off the rock over which it creeps by waves and tide wash, by stones, or by enemies.

Among the limpet-like descendants of this ancestor, the shell rim has undergone increased downward growth, so that it has come to cover the whole animal. When the limpet feels any shock, it therefore pulls its shell down, by means of the muscle already spoken of, until the shell rim is pressed against the surface on which the animal is living, and it then "holds on" with its body thus completely sheltered. The muscles which pull the shell down have extended all around the animal except, naturally, above the head, and so has come into existence the well-known horse-shoe. The spiral curl of the shell has broken off and disappeared among these forms, except at a very young stage; and we can easily understand that such a round knob at the top of the shell would have given too much purchase to the waves.

Among he Top-shells (*Trochus*), the spirally curled shell has also grown, but this time mainly in length, so that the animal can pull itself back completely. When thus pulled back, the posterior portion of the foot remains nearest the shell mouth, and on its exposed surface the skin has developed a horny protection—the operculum. So retracted and protected the animal can be buffeted about by the waves without running great risks.

The slit and the keyhole limpets (*Fissurella*, &c.) and the ormer seem on the other hand to have become confined to nooks beneath boulders and chinks in the under side of rocks, where this danger of detachment is less felt; but this habitat has led to the survival of other modifications. The spaces were often narrow and a high hump and shell such as that of the supposed ancestral form would have been a great embarrassment. In the ormer, therefore, variations of its position have survived, so that this spiral has laid itself down on its left side—why the *left* side will be discussed later. In this way height was reduced and the shell was modified into a covering plate, the remains of the spiral curl surviving at the back.

Other difficulties of the ancestral Gastropod were connected with the breathing process—the outgoing current interfered with the incoming ones on either side, it was difficult to breathe when the tide was away, and sand and débris tended to soil and damage the gills. The variations which have accumulated in the different types and helped to overcome these difficulties have been very numerous, and we can only

discuss in detail the ormer's adaptations. In the limpet both gills have disappeared, and new breathing organs have appeared on the thin skirt which lines the inner surface of the shell's rim. In other Gastropods, *Trochus* for example, the incoming stream of the right side became weaker (for reasons too involved for present discussion) and most of the breathing and, finally, all of it was done by the gill of the left side, its fellow on the right disappearing altogether. The outgoing current then went out along the right side, and so no longer interfered with that coming in along the left. The shell muscle of the left side was to some extent an obstacle to the free entry of water on that side, and it disappeared from *Trochus* and was reduced in the ormer, in which latter also the process of reduction of the right gill has begun. When the left shell muscle was reduced the shell, unsupported on this side, sagged somewhat; and this enables us to see why it is on this side that the shell of the ormer flattened itself down, and it also helps us to understand the direction of the spiral curl of the shell of a *Trochus*.

The intrusion of grit and seaweed, and the difficulty of breathing, must have been specially serious drawbacks to forms living in such places as the ormer frequents. To overcome the difficulty of breathing, variations in the direction of increased length of the gills have survived, and as a natural consequence, the cavity containing the gills has become very deep.

It has already been said that the ancestral type had a slit in its shell rim so placed that it hastened the exit of the outgoing stream of water from the gill-cavity. Such a slit would, however, have to be unusually long to be useful to the ormer with its deep gill-cavity; while any slit at all, much more a deep one, would be a drawback in the peculiar conditions of our type, which must be specially liable to intrusion of grit and seaweed into the cavity. A very simple and effective modification has survived and overcome this drawback. The two edges of the slit have grown together except at certain fairly regular intervals where, therefore, holes are found. These form the well-known row of holes around the left side of an ormer shell. Of these holes the old ones are continually being closed, so that only the six latest added remain open.

If an ormer be taken out of its shell, a thin flap of skin (mantle) is seen all around. This mantle has the function of forming the shell substance. Over the gill-cavity it is specially thickened, and above the front end of the cavity a deep slit is seen in its anterior edge. The slit therefore survives in the

mantle though it has been modified in the shell. The edge of this mantle along the slit has developed three tentacles which can project through three of the holes in the shell, and so help the animal towards an impression of what is immediately above or outside the shell. When they are irritated the animal withdraws them, and can also bring together the two edges of the slit in the mantle flap, so as to completely close the gill-cavity in this direction. The front edge of the mantle near the slit has grown both in extent and in thickness, and when contracted it can almost close the anterior opening of the gill-cavity, so that the latter can be practically completely protected from unfavourable circumstances.

We have already seen how the ormer gains an acquaintance with what is immediately above its shell, but so important to it is this kind of impression (for avoiding blows and falls and culs-de-sac) that tentacles have developed on a frill which projects all around the shell edge, and grows from the upper part of the foot. *Trochus* also has this frill, but in its case the tentacles are few in number and comparatively long; they can easily be seen when the animal is watched creeping under water. Besides those tentacles which project through the holes in the shell and those just described there are, as in all Gastropods, the long head tentacles, and, behind them, the eyes which have grown out on stalks, so that the animal can project them beyond the shell edge. The ormer is therefore particularly well provided with sensory arrangements for giving it an impression of its immediate surroundings.

It has already been said that the limpet relies for safety on being able, at any moment, to secure intimate contact between the edge of the shell and the surface on which it is creeping or resting, and it has also been explained that the muscle fibres making up the mass of its foot go up to be inserted against the shell in the well-known marginal horseshoe area. By contracting these the animal holds the shell down much more tightly than would be possible with, for example, a centrally placed muscle.

The ormer on the other hand creeps a great deal about the under surface of rocks, and protects itself by holding on to such firm surface as may be available. It holds on by intimate contact between the foot-sole and the rock surface, and as often only a portion of the foot-sole is in such contact, so must every fibre in the foot go as straight as possible into the shell, and be fixed into the latter as near as possible to the animal's centre of gravity, to reduce the detaching influence of the animal's weight. In other, and perhaps more correct terms, these fibres

must go through the centre of gravity, for otherwise they could not adequately cope with the opposite force due to the animal's weight which acts at that point. We therefore find that in the past history of the ormer variations have been selected and have accumulated, with the result that the formerly right shell muscle has shifted to a central position and has become much enlarged. It is the right muscle that has so moved, because the left one was already being reduced, as was explained further above. It is to be noted that the very much reduced left shell muscle has acquired a new and different use; by its contraction it helps to close the front opening of the gill-cavity, an operation already described as of great importance to the animal.

It often happens that the ormer, in creeping about over loose seaweeds and irregularities of the rock surface, loses its hold and falls. The weight of the shell, and the fact that this is usually downwards when it is creeping, make the animal fall with the shell underneath, and the foot, therefore, in the air. A limpet under such circumstances is comparatively helpless, so specialised has it become to the attachment habit. The ormer, however, is not so specialised, and has a characteristic method of righting itself. The common Gastropod ancestor had a long creeping foot (like that of a *Trochus* or a snail perhaps) which was pointed behind, making a kind of tail process. The ormer, to some extent, retains this tail, notwithstanding the broadening which has occurred. When now it has fallen and lies shell downwards on the pebbles or grit, it extends this tail process of the foot and moves it about actively, bending it round the shell's edge until it finds a firm surface. Then it affixes the sole of this tail region to that surface, and contracts the muscle fibres which stretch between that and the centre of the shell. In this way the shell is raised a little, and so a larger area of the foot-sole can be fixed to the firm surface. Then these newly-affixed fibres contract, and so the process is repeated till the shell has been raised just past the vertical, and it falls of itself, and then the animal is once more able to creep about as usual.

In this process of feeling for a firm surface the upper side of the foot must continually rub against the shell edge, and on this rubbed part special gland tissue has developed, whose secretion acts as a lubricant and reduces wear and tear. At least this seems to be a likely explanation of a structure that has long puzzled anatomists. The gland tissue can easily be seen on a fresh animal as a series of brownish lines on either side of the middle of the upper surface of this tail process of the foot.

The enemy of the ormer in the Channel Islands is the powerful Octopus, which prowls about the corners of our shores seeking smaller fry for food. He hunts by sight, and this helps us to understand how it is that the ormer, even before its shell gets covered with seaweeds, &c., has become coloured so as to very closely resemble its normal surroundings, which are grey rock surface studded with reddish patches, often of hard and limy seaweeds. The animal shows only its head and the frill with tentacles around the shell edge, and these are characteristically coloured a mixture of black and seaweed green, so that to an imperfect sight the ormer is by no means conspicuous so long as its foot-sole is against the rock. The whole surface of the frill or epipodium just mentioned is studded with knobby projections, and it is probable that these prevent the suckers of the Octopus from getting a firm hold; but this, and much besides, remains to be elucidated.

The ormer is, therefore, a very fruitful subject for evolutionary study, even as regards its more obvious internal characters, which can be observed without special anatomical knowledge, and an even greater interest attaches to its external anatomy, for it is one of the most primitive of surviving Gastropods. If it is permissible I should, therefore, like to commend this common form to any member of the Society who may be interested in the fauna of the shore. Much remains to be found out concerning the food and mode of feeding of the ormer, about its relations with the Octopus, particularly whether the latter can pull small ormers away from their attachment, about the rate and extent of its movements, and many other matters. Knowledge of this kind would materially assist the constructive criticism of the evolutionary theory, and its pursuit affords an alternative or a variant to the work of cataloguing species, which is usually undertaken by societies of natural science, and which, however valuable it may be, loses some of its interest as the list approaches its limit. Study of habits, on the other hand, is a task of ever-growing interest, and may with the greatest advantage be pursued simultaneously with the work of collecting, for by so doing the list which is the result of the collecting will be improved by addition of notes on the relations of the different forms, while an ever-growing insight into scientific method will reward the worker.

[At a meeting of the Guernsey Society of Natural Science, held on the 20th January, 1904, Mr. E. D. Marquand, A.L.S., exhibited two examples of imperforate ormer shells, and read notes upon them, of which the following is an abstract:—

About eleven years ago, Mr. Edgar A. Smith, F.Z.S., announced in the *Conchologist*, vol. II., p. 75, the presentation to the British Museum of an ormer shell in which the characteristic perforations are entirely absent,—a peculiarity which, Mr. Smith remarked, "appears to be of the greatest rarity, for I only find that one notice of its occurrence has ever been published, nor has it been observed by any of the conchologists and others whom I have consulted." The record alluded to occurs in Jeffrey's *British Conchology*, vol. III., p. 281, where the author states, speaking of *Haliotis tuberculata*, that "one in Mrs. Collings' collection has no orifice, although it is about an inch and a quarter in length." Mr. Marquand said he was pleased to be able to record the occurrence of another example, which was found on the famous shell beach at Herm about thirty years ago, by the late Mrs. R. S. Boley of this island, who treasured it as a curiosity until he informed her of its extreme rarity; and a few months before her death she most kindly presented it to Mr. Marquand, who now exhibited the specimen. It is smaller than the other two, being only 12 millimetres in length, whereas the one mentioned by Jeffreys is 28 millimetres long, while the British Museum one, Mr. Smith says, measures 2¼ inches. Jeffreys was mistaken in supposing that the imperforate specimen he mentions was "in Mrs. Collings' collection."—but the error is easily explained. In the early sixties Jeffreys used to come over to Guernsey shell-collecting, and became very intimate with the Lukis family; more especially with the late Dr. F. C. Lukis, who was an ardent conchologist. This gentleman's two sisters, the late Mrs. Collings, wife of the then Seigneur of Sark, and Miss Lukis, who is still living, had also studied the shells of these islands, and of course submitted their collections for his inspection. And so, quite unintentionally, Mrs. Collings got the credit of possessing a shell which had really been found by, and had always belonged to, her sister. Miss Lukis, who distinctly remembers showing the shell to Jeffreys, informed Mr. Marquand that she found it alive on the north coast of Guernsey, but she did not recollect noticing any peculiarity about it at the time; and it was only after the shell had been cleaned (it still shows traces of animal matter) that the absence of holes was discovered. Mr. Marquand was indebted to Miss Lukis for kindly allowing him to exhibit this original specimen at this meeting. He could not say what the outside was like, as the shell was gummed down on a tablet; but in the Herm example a series of tubercles replaces the apertures, so that without close inspection there is nothing externally to mark its peculiarity. If this is always the case, he thought it would not be easy to detect the absence of holes in a living ormer. If another specimen could be found alive the dissection of the animal would settle the interesting question whether or not the slit in the mantle is, as Mr. Smith suggests, altogether wanting.]

NOTE ON LUVARUS IMPERIALIS,
A VERY RARE FISH.

BY MR. A. COLLENETTE,
Hon. Curator, Guille-Allès Museum.

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On the 18th of September, 1902, Mr. Thomas M. Falla, fishing off St. Martin's Point, took a specimen of the *Luvarus imperialis* and brought it to town. It was exposed to view on the slabs of Mrs. Falla's stall and Mr. Pitts and I decided to purchase the specimen. It was at once sent to Messrs. Gerrard and Sons, Naturalists, London, who, with the assistance of the British Museum staff, identified it, and wrote us to the effect that it was extremely rare, and therefore a valuable acquisition.

Some time after, while in London on business, I called at the British Museum, Cromwell Road, and asked to be permitted to view a specimen of the fish. Mr. Boulenger, F.R.S., received me very kindly, and after asking me questions as to the capture of the fish, informed me that it was only very rarely taken, so that it was still practically unstudied. He placed me in the hands of Mr. C. Tate Regan, B.A., who, at considerable trouble, lifted the Museum specimen from a large tank, and pointed out its peculiarities. I also saw a specimen of the young. These two individuals were all that the Museum contained, and are not exhibited in the collections open to the public. I understood from these gentlemen that there are but one or two specimens in other Museums, and that, therefore, our Guernsey Museum was to be congratulated on the acquisition of the specimen.

The *Luvarus imperialis* has been seen and described by various writers, but owing to its rarity its place in the classification of fishes was, up to the examination of our specimen, still a matter of doubt. It has been taken in the Channel once before, in the Mediterranean and in the Australian waters. It is probably an inhabitant of the Atlantic.

Mr. Regan, in a paper appearing in the Annals of Natural History for October, 1902, states that it was placed by Günther in the *Coryphænidæ*, the typical fish of which is the *Brama Raii* or Ray's Bream. There are some points of similarity in the external appearances of these fishes.

Cuvier gives it a place in this family also, but Regan, owing to several important agreements, arrived at the conclusion that the *Luvaridæ* were closely allied to the *Acanthuridæ*; but you will see later on that he has not adhered, owing to his study of our specimen, to this conclusion. The points of agreement between the *Acanthuridæ* and *Luvaridæ* he gives as follows:—"In both families the body is oblong and compressed, the dorsal and anal fins are long, the caudal peduncle slender, the caudal fin deep, the scales small, rounded and usually rough, covering the head and body, the lateral line is concurrent with the dorsal profile. In both also the gill-membranes are broadly united to the isthmus. There are four gills, with a slit behind the fourth, five branchio stegals, well developed pseudo-branchiæ and short gill rakers. The mouth is small, the premaxillaries are not protractile and the maxillaries are attached to them and not independently moveable. The toothless palate, the palatine arch attached only to the pre-ethmoid, the coalescent pelvic bones, are further points of agreement between the two families." He goes on to say: "*Luvarus*, like the *Acanthuridæ*, is a vegetable feeder and exactly resembles them in its visceral anatomy. The stomach is large and thick-walled, the pyloric appendages short, simple and few in number, and the intestine very long and much coiled; the air bladder is large." Mr. Regan says that "the skeleton of *Luvarus* resembles the *Acanthuridæ* in many features."

One point of disagreement Mr. Regan speaks of. He says: "Apparently the remarkable feature of the loss of the anterior rays of the dorsal and anal fins during growth is peculiar to *Luvarus* and not paralleled in the *Acanthuridæ*."

In a second note on the "Skeleton and systematic position of *Luvarus*," published in the same magazine for April, 1903, and after a study of the specimen now in our Museum, Mr. Regan gives some interesting details for which see the original papers.

I have called attention to Mr. Regan's notes because it is only by reference to them that an accurate knowledge of the classification of the fish can be obtained, and of the reasons why it is that, although Mr. Regan and others had placed the fish in the families named, it is now moved to the *Scombridæ*.

This family includes the Mackerels, the Tunnys, the Bonitos and the Remora.

The skeleton of the fish has been mounted. It is not perfect because of the cartilaginous condition of many of the bones, as well as owing to an injury received in securing the fish, but it is sufficiently perfect to serve the student's purposes. The body of the fish could not be preserved, so a cast was taken, under great difficulty, by Messrs. Gerrard, and the result is the model in the Museum, in which the external features of the fish are beautifully reproduced. The original specimen was $4\frac{1}{2}$ feet long, and was probably full-grown, or nearly so.

THE BIRDS OF ALDERNEY.

BY MR. E. D. MARQUAND, A.L.S.

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THE notes which I am about to read to you are unfortunately much less complete than I could wish, but they are intended simply as a contribution towards a more thorough knowledge of the ornithology of these islands than we possess at present.

The late Mr. Cecil Smith's little book contains a great deal of valuable information, and is most useful, inasmuch as it is the only work we have on the subject. But much additional matter has been accumulated since it was written twenty-five years ago, so that the entire work stands in need of thorough revision and correction, in order to bring it up to date.

From a Memoir of Cecil Smith which appeared in the *Zoologist* soon after his decease, I learn that several articles and notes about the birds of the Channel Islands were contributed by him to that journal subsequent to the publication of his book. They are as follows :—

Long-eared Owls in Guernsey (1880).
Red-legged Partridge in Guernsey (1880).
Buffon's Skua in the Channel Islands (1882).
Marsh Harrier in Herm (1882).
Little Gull in Guernsey (1885).
Pallas's Sand Grouse in Guernsey (1888).

In the following list I have placed the birds in the order adopted by Smith, and I have confined my remarks as far as possible to information which is not supplied in his book. Nothing will be said, therefore, about many of the commoner species which he has already noted as occurring in Alderney.

If any ornithologist contemplates paying a visit to Alderney, I shall be pleased to give him the names of three or four gentlemen who shoot a good deal in the autumn and winter, and who possess preserved specimens of many birds they have killed. Among them I believe there are some which have not been recorded for the Sarnian Islands. At any rate, I noticed several which I could not identify at sight.

White-tailed or **Sea Eagle.**—Two specimens were shot during the autumn of 1899. The first, killed on the islet of Burhou about the beginning of November, measured 7 feet 5 inches across the wings. The second specimen was shot in Alderney during the first week in December, and is said to have measured 8 feet in expanse. In both cases the birds were seen flying about for some days before they were killed.

Hen Harrier.—On the 4th July, 1902, I had a good view of a fine male Hen Harrier. The bird rose within 40 yards of where I stood, on the moor between the old Telegraph Tower and Trois Vaux, and as it flew away from me I thought at first it was a Heron, but when it turned I perceived at once that it was one of the Falcons. I again saw the same bird (or perhaps another) the following year on the Clanque Cliffs, on June 3rd, 1903. Cecil Smith says he never saw the Hen Harrier alive in the Channel Islands.

Barn Owl.—I have once or twice seen this bird flying at dusk, and on August 9th, 1901, some boys found a wounded specimen on the seashore, and killed it, after which I saw it in their possession.

Red-backed Shrike.—Although I never actually saw this bird in Alderney, it cannot be rare, as I had no less than fifteen eggs brought to me in 1899, and others again the two following years. On June 2nd, 1902, a boy brought me three eggs of the pink or reddish variety, which is rather uncommon.

Missel Thrush.—Forty years ago, according to Smith, this bird was fairly common in Alderney, but at the present time I should call it rare. Of hundreds of eggs brought me by boys those of the Missel Thrush only occurred once, on April 17, 1901, when a lad brought me a couple which he had just taken, and he did not know what bird they belonged to.

Ring Ouzel.—As Mr. Smith says he never saw one of these birds either dead or alive in the Channel Islands in the spring or summer (although Ring Ouzels are as frequent in Alderney as in Guernsey during the autumnal migration) it may be well to note that at the beginning of April, 1903, Capt. Arnold, of Balmoral, captured one in his garden, and described it to me as "a blackbird with a white neck."

Hedge Sparrow.—In 1900, I heard the cheerful song of a Hedge Sparrow as early as the 25th of February.

Redstart.—In Smith's "Birds of Guernsey" the occurrence of the Redstart in these islands is considered rather dubious, and the author seems to imply that the Black Redstart may have been mistaken for it. I am glad to be able to settle this point as regards Alderney, for I have had the eggs brought to me every year. They are considerably smaller and much paler blue than the Hedge Sparrow's (more like a Starling's egg in colour) and the shell extremely thin and fragile. The eggs of the Black Redstart on the other hand are pure white, and moreover there is no positive evidence that the latter species has ever bred in the British Islands. But there is a curious point about the nidification of the Alderney Redstart which deserves notice. Seebohm, in his splendid book on British Birds' Eggs, writes concerning the common Redstart: "We must not seek its nests among the branches, nor yet amidst the brambles or vegetation on the ground, but always in some hole, well protected from the wind: holes in walls and trees are, as a rule selected, but most peculiar sites are sometimes chosen, for example, gateposts, flower pots, and crevices under the eaves. Indeed, in this respect, the Redstart is almost as famous as the Robin." All the other books I have consulted agree in describing the nesting-place as anywhere except a bush Now I made a point of enquiring particularly from the Alderney boys what the nest was like, and where it was built, and in every case they described it as being like a Linnet's nest and built in a furze bush, or (in one case) among brambles.

Wheatear.—Very common in Alderney, where it is known by the name of "Stone Jack."

Chiffchaff.—The earliest date on which I have heard the curious note of this little bird was the 2nd of April, that was in 1903; the previous year I first heard it on April 23.

Golden-crested Wren.—I only saw this tiny little bird once: on April 10th, 1900, flitting about the trees in the valley behind Essex House.

Tree Creeper.—Decidedly rare: two eggs were brought me in May, 1899. I have lately ascertained that this little bird is locally known in Guernsey by the patois name of "Epluque-pommier," a name misapplied by Victor Hugo in one of his novels to the Long-tailed Tit.

Wall Creeper *(Tichodroma muraria).*—This is undoubtedly the rarest bird that has ever visited Alderney, so far as we have any record. It is a native of Southern Europe, and until the arrival of the one I am about to mention, only three specimens had been seen in the British Isles, viz.: one more than a century ago, in 1792, the second in 1876, and the third at a later date which I cannot give at this moment. On the 19th of December, 1899, young Mr. Le Maistre brought me for identification a beautiful specimen of this little bird, from which I made the following description:

Length from tip of beak to end of tail, 6¼ inches; length of beak, which is long and curved, 1 3-16 inch; length of tarsus, ⅞ inch.

Upper part of head and back slate grey. Throat white or very pale grey. Belly slate colour. Forehead tinged with ochreous brown. Wings marked with bright crimson, but the greater portion dark brown. Four first primaries dark brown, each with two large white spots; the fifth and succeeding primaries each with one buff-coloured spot. Upper web of the central primaries and wing-coverts crimson. Tail dark brown, the main feathers tipped with grey, two outer tail feathers on each side broadly edged with white.

Mr. Le Maistre, who was with the man (Charles Kimber) that shot the bird, told me they noticed it for some time flying about and settling on a stone in a quarry, and as they fancied there was something uncommon about the bird, Kimber shot it, though neither of them had the least idea of its rarity. The specimen was afterwards stuffed, and is now in Mr. Le Maistre's possession.

Nightingale.—This bird is not mentioned by Smith at all, but I recorded its occurrence in Guernsey some years ago. Capt. Hasted, of the Wiltshire Regiment, who was stationed in Alderney for two years, informed me that he had both heard and seen a nightingale on one occasion in Alderney.

Great Tit.—This is an exceedingly scarce bird in Alderney, and I lived there two years and a half before I saw one. In November, 1901, several were seen by me at different times, and then they disappeared. I saw two in October the following year, and one in May, 1903. Smith says the Blue Tit is resident in all the Channel Islands, but I have seen no specimen, either of the bird or its eggs, during my four years' residence in Alderney. Nor have I seen any of the other Tits.

Rock Pipit.—During my visit to the islet of Burhou in May, 1899, one of the boatmen found a nest containing five eggs in the roof of the cottage. These eggs, which are now in my collection, are of two different shades of colour—three are dark brown and two are reddish.

Snow Bunting.—In the first week of November, 1902, a pair of Snow Buntings were seen on several occasions close to the Old Harbour. Then one of them disappeared, and soon afterwards the other was seen no more.

Bullfinch.—Capt. Hasted told me he had on (I think) two different occasions seen this bird in Alderney.

Starling.—This bird offers an interesting example of the remarkable change which sometimes occurs in the habits of purely wild creatures. Half a century ago, a starling was never seen in these islands except in winter time, and even 25 years ago Cecil Smith says he never saw one in any of his summer visits to Guernsey. At present starlings abound all the year round, and breed both here and in Alderney in great numbers. A pair which had their nest in a roof not far from my window in Alderney, reared three broods of young one year.

Raven.—Rare in Alderney. I am almost certain I have seen it more than once, but the only occasion on which I could be quite sure was on the 26th September, 1900, when I both heard and saw a Raven on the cliffs.

Hooded Crow.—This being only an occasional winter visitant, its occurrence in Alderney in summer is of great interest. On the 3rd August, 1899, I saw a Hooded Crow flying on the cliffs in company with about a dozen common crows, and I saw the bird twice. It is the only time I have observed this species in Alderney.

Magpie.—It is curious that a bird so very common in Guernsey as the Magpie should be entirely absent in Alderney, but it is so. No one seems ever to have seen one in that island.

Wryneck.—Common in Alderney, arriving generally during the first week in April. The earliest date on which I have heard the note is April 6th, and although it usually ceases to sing about the beginning of July, I heard the peculiar note as late as the 2nd and 4th of August in 1899.

Cuckoo.—Very numerous in Alderney in some years, more so than anywhere else I can remember. In 1901, the familiar note was heard in all parts of the island on the 18th April, which shows that these birds arrive in flocks or small parties. In 1902, I again heard the Cuckoo on the 18th April, but in 1900, not till the 21st. Cuckoos' eggs vary considerably in colour, but the three or four Alderney specimens I possess (taken in two different years) are all of the same shade, closely resembling the eggs of the Titlark. I may mention here, on the authority of one of our best English ornithologists, that there is no authentic instance of the Cuckoo having been heard anywhere in the British Isles earlier than the 6th April, and very rarely even then; no reliance whatever must be placed on newspaper paragraphs about Cuckoos singing in March.

Night-jar.—These birds visit Alderney during the autumnal migration, and are occasionally shot in October and November, but a few arrive in the early summer and possibly breed here. On the 23rd May, 1899, I saw a pair fly up from among the bracken in Rose Farm Valley, but of course it was too early to look for eggs, which I have found in England as late as August. In 1902, on the 22nd May, four or five Night-jars rose at my approach, out of an old quarry below Essex Castle; the birds seemed fatigued, and it is my belief that they had only just arrived in Alderney from the south.

Swift.—These birds are very common in Alderney, in fact Swifts are almost as numerous as Swallows. They arrive during the early days of May, and in 1902 I saw a solitary specimen flying about in very stormy weather with east wind and rain, as early as April 27th.

Swallow.—In 1901, Swallows and House Martins first appeared on April 18th, when they occurred in some numbers. They arrived earlier the following year, viz., April 12th, the air being mild and the wind south, after a stormy spell of bitter east wind. Swallows usually leave about the 12th or 15th of October, though a good many remain later.

Sand Martin.—In the "Birds of Guernsey" the author seems rather doubtful about the occurrence of these birds, at least in the smaller islands, and is of opinion that they should be considered simply spring visitants. In Alderney, however, I have seen Sand Martins every year during the summer, but mostly single birds, or at most three or four together.

Whether they breed in the island I do not know—probably not—but I saw one on the wing in 1900, as late as October 8th.

Wood Pigeon.—An egg (which was addled) was brought me in April, 1900; it was one of two which were taken by a boy from a nest found near the Terrace on April 6th. A fortnight afterwards I saw a pair of Wood Pigeons flying among the trees in the upper part of the Terrace, no doubt the pair that owned the nest. This bird lays very early, but it is not generally known that occasionally very late broods have occurred. In the month of November, 1900, a pair of Wood Pigeons hatched and successfully reared two young ones, in a tree in the Temple Gardens, close to one of the busiest of London thoroughfares.

Turtle Dove.—As there is no record of the Turtle Dove breeding in these islands, it is interesting to note that an egg of this bird was brought me in Alderney by a boy who called it a Stock Dove's egg, on June 23rd, 1899. Besides this, I have seen in Alderney, in different years, young birds in immature plumage flying with the old ones at the end of May and in June.

Quail.—In Alderney there are what might be called "quail years." One of them was 1899, when these birds were plentiful, and their peculiar call was a familiar sound on the Blaye. The following year they were scarce, and since then I have not once heard the note. During the first-mentioned season Quails bred in some numbers. On July 2nd, a mower inadvertently smashed a nest of 13 eggs with the "heel" of his scythe. On July 4th, another nest was found, but the young were hatched. On July 8th, a friend of mine gave me five eggs which a rascally boy had blown and strung on a coarse piece of twine.

Corncrake or **Landrail.**—I heard this bird's call in several parts of Alderney on May 9th, 1899, and the following year on May 7th. The spring of 1902 was exceptionally cold, and Corncrakes were very late in arriving; they were first heard on May 27th. A farmer told me they never expect to see Corncrake's eggs until after Midsummer Day, and my earliest eggs were taken during the first week in July. But I have had them as late as August 9th, and even at that date not too far incubated to allow of blowing.

Lapwing.—Very rarely seen in summer. I saw a pair on the Blaye on June 9th, 1899, and at the end of the same month I saw three in a field at Longy.

Kentish Plover.—Breeds every year in considerable numbers on Platte Saline beach, but the eggs are extremely difficult to detect, as they lie on the bare sand without the smallest vestige of a nest, so that unless the eye actually lights upon them they are undistinguishable from their surroundings. I have found Kentish Plovers eggs at different elevations on the beach, from just above the line of high water mark. My little five year old son found a clutch of three eggs among tufts of Sea Holly. Eggs may be found from May to about the middle of July. On one occasion, when searching for eggs, I found a young bird a day or two old, like a tiny ball of yellow wool the size of a small walnut, crouching under some dry seaweed, while the parents were hovering round in great anxiety. I never observed any eggs partially buried in the sand, as commonly stated, but of course in windy weather this might be the case.

Oyster-Catcher.—On the Islet of Burhou these birds breed plentifully, and at the beginning of July I have taken a dozen eggs there in a day. As a rule they are placed on the bare rock or on a ledge, without any vestige of nesting materials, but in one instance the eggs were resting on a layer of small rabbit bones, which did duty for a nest. The earliest eggs I know of were taken on the 18th of May.

Curlew.—It is difficult to understand why Curlews do not breed in Alderney, since they remain throughout the breeding season, although they are

more numerous in the winter. But I never heard of eggs being found. Curlews are called "Maybirds" by the Alderney people.

Sanderling.—A specimen in winter plumage was shot in Alderney on December 19th, 1899, and brought to me for identification. Smith says he has never seen the Sanderling in these islands in late autumn or winter, so that it is well to record the present instance.

Heron.—At various times during three or four years I have observed a solitary Heron haunting the rocks in Clanque Bay.

Eider Duck.—During the winter of 1902-3, one if not two of these birds were shot in Alderney, but unfortunately I did not at the time note particulars of the occurrence.

Guillemot.—The great breeding station for these birds is Ortach Rock, but I have in my collection eggs taken on the Nannel Rocks, to the north of Burhou, and also on the rocks on the south of Alderney. The eggs may be found from the middle of May to the third week in June, the later ones being probably the second sitting.

Puffin.—The Alderney fishermen call these birds *Barbelottes*, and what they call Puffins are Guillemots. During the breeding season they occur at Burhou in countless thousands, and it is a pretty sight to see them on a calm evening sitting on the water "as thick as flies on a flypaper," as my boatman once elegantly expressed it. But Puffins also breed on the cliffs of Alderney between Trois Vaux and Clanque, and I have had eggs brought me from the Nannels and Ortach.

Razorbill.—Ortach Rock is the great breeding place for Razorbills as well as Guillemots, where they are very numerous, but I have also had eggs from the Nannel Rocks, from the Renonquet Rocks west of Burhou, and from Coque Lihou, on the south of Alderney. Fresh laid eggs are to be had from the first week in May to the beginning of June, about the 20th of May being perhaps the best time.

Shag or **Green Cormorant.**—Although fairly common in Alderney, the Shag, or Cormorant as it is usually called, is not nearly so abundant as Smith asserts; it is much less numerous than the Lesser Black-backed Gull, for instance. These birds breed in numbers on the Alderney cliffs, and also on Ortach and the Renonquet Rocks. Smith says the Shag does not breed on Burhou, but I have three eggs taken there in May, 1899, and I believe one or two pairs breed on the islet every year.

Common Tern.—Rare in Alderney. I have seen very few of these beautiful birds during my residence in the island, and cannot remember ever seeing a pair together, nor did I ever hear of anyone finding the eggs. I have however, seen single birds in summer time.

Kittiwake.—I had a good view of this pretty little gull at Burhou in May, 1899, but I only saw one. Smith expressly states that the Kittiwake does not breed in any of the Channel Islands, and it may be so; but I have been more than once told about a little gull that breeds in small numbers on the Garden Rocks, at the south-western end of Alderney, and from the description I think it very probable that the bird is a Kittiwake. Unfortunately I have never been able to procure an egg for identification.

Herring Gull.—Common in Alderney, where it breeds plentifully on the cliffs. One egg was brought to me which had been taken on the Nannel Rocks, north of Burhou. Herring Gulls do not breed on Burhou itself.

Lesser Blacked-backed Gull.—On my first visit to Burhou on May 30th, 1899, these birds were breeding in multitudes, and I saw hundreds of eggs, though the majority of the nests had been robbed and were empty. About 5 weeks later I counted between 60 and 70 nests containing eggs or young birds in only one part of the islet. Some nests were made of sea-weed (*Fucus canaliculatus*) without a scrap of anything else, but the material used in most cases was the Sand Spurrey (*Lepigonum rupestre*)

which abounds. On one visit, on the 30th May, one of our boatmen took from a nest a young gull, still in the down, but sufficiently grown to run about. I possess two very small eggs taken at Burhou; they are no larger than those of the Arctic Tern, and look very like them, so that at the first glance I thought they were.

Great Black-backed Gull.—To my knowledge this gull breeds on Ortach Rock, on the Nannel Rocks, and on the Renonquet Rocks, but only very sparingly in the last two stations. I have had a clutch of three of these fine eggs (the largest of the British Gulls) brought me as early as the second week in May.

Storm Petrel.—Breeds on the island of Burhou in great numbers. I have taken eggs there from the 28th of May to the 5th of July, but at the latter date all the eggs were hard sat, and consequently extremely difficult to blow, for the shells of Storm Petrel's eggs are thinner and more fragile than any I know of the same size. In 1901, at least one pair of these birds bred on the Garden Rocks at the south-western point of Alderney, for the bird was captured on the nest, and the egg taken. This is an unrecorded breeding station. On one occasion, as I held in my hand one of these curious little web-footed birds, it suddenly spouted from its beak a quantity of oil, which had no offensive odour, at least to my perception, although two friends who were with me declared they could smell a Petrel a yard or more away. When I was forced to pass a night on the lonely islet of Burhou in 1899, I made two interesting observations on these birds; the first was that their peculiar wailing cry, *Kerek-oo, Kerek-oo*, is kept up throughout the night as the birds sit on their nests; and secondly, that although Storm Petrels are never seen on land during the daytime, they fly about after dark just like bats.

THE CHRYSIDIDÆ, ICHNEUMONIDÆ AND BRACONIDÆ OF GUERNSEY.

BY MR. W. A. LUFF, F.E.S.

THE species included in the above-mentioned families are members of that large section of insects, named the *Hymenoptera*, of which I have already published lists of the *Aculeata* (Ants, Bees and Wasps), *Cynipidæ* (Gall Insects), and *Tenthredinidæ* (Saw Flies). The present list will complete the order, with the exception of the *Chalcidæ*, which comprise a vast number of insects, mostly minute, and many of which are but little known.

The *Chrysididæ*, or Ruby Wasps, are excessively brilliant in colour, red, green and blue, with a metallic gloss. The commonest species, *Chrysis ignita*, is usually very abundant in fine sunshiny weather, settling on walls, sand banks, &c., and running with great activity. The larvæ live within the nests of bees, eating the food intended for their young.

The *Ichneumonidæ*, or Ichneumon Flies, form a family of enormous extent. Most of the species, in the larval state, live within the larvæ of *Lepidoptera;* some, however, are known to attack spiders and insects of other orders. Their life history is but little known, as they are concealed within the body of their victim until they have completed the change into the pupa state. The parent insect lays its eggs by means of an ovipositor inside the body of its victim in some cases, in others outside the skin. In the latter case, the young larva soon bores into the body of the caterpillar and disappears. The larvæ are legless maggots, usually of a white or creamy colour, they feed on the fatty portion of the interior of the caterpillar, and carefully avoid injuring any of the vital organs until the time arrives when they are about to change into the pupa, when they usually finish by killing their host.

The *Braconidæ* are very similar insects to the *Ichneumonidæ;* there are, however, constant differences in the wings which serve to distinguish them. The *Ichneumonidæ* have two recurrent nerves in the anterior wings, whilst in the *Braconidæ* there is but one. It is believed that all are parasitic. As many as 1,200 specimens have been recorded from a single Lepidopterous larva. *Apanteles glomeratus* is well known, being parasitic on the larvæ of the Common White Butterflies. Often in the summer we come across masses of small silky cocoons on our cabbages, these are the pupæ of the above-named insect. These little creatures, insignificant as they appear, are the best friends of the gardener and agriculturist; they keep in check the countless hordes of caterpillars which, if allowed to multiply, would soon eat up every plant upon the face of the globe.

In the present list I have not recorded a tithe of the species which will eventually be found to inhabit this island, but the list is the result of several years' collecting. Two species at least are new to Britain, and one is as yet undescribed.

I am indebted to Mr. Claude Morley, F.E.S., one of the most accomplished students of the order in England, for the names of most of the species in the following list. The nomenclature followed is that of the Rev. T. A. Marshall's catalogue of British Hymenoptera published by the Entomological Society of London.

CHRYSIDIDÆ.

Hedychrum ardens, *Coq.* Several specimens taken near Doyle's Column and at the Gouffre.

Chrysis ignita, *Lin.* Very abundant.

C. viridula, *Lin.* Three taken in Talbot Valley.

C. bidentata, *Lin.* One, Saints' Bay valley.

ICHNEUMONIDÆ.

Ichneumon lineator, *Fab.* Several.

I. microstictus, *Gr.* One fine female. Cliffs near Petit Port. June.

I. vaginatorius, *Lin.* Not common.

I. confusorius, *Gr.* Not uncommon.

I. gemellus, *Gr.* Several taken during June and July on the southern cliffs.

I. lepidus, *Gr.* Two specimens, Grande Mare, Vazon.

I. consimilis, *Wesm.* Two taken at the Gouffre. One near Petit Bôt.

I. protervus, *Holmgr.* One specimen of this non-British species taken near Fort Doyle.

Exophanes exulans, *Gr.* Not uncommon in July, Moulin Huet, Petit Bot and Gouffre.

Platylabus dimidiatus, *Gr.* This pretty species is not uncommon during July and August.

P. pedatorius, *Fab.* Common.

Phæogenes sp? One specimen, Fermain, apparently undescribed.

Cryptus viduatorius, *Fab.* Three specimens near Saints' Bay.

C. migrator, *Fab.* var. *brevipennis*, Desv.

Hemiteles pulchellus, *Gr.* Two specimens taken of this non-British species.

H. melanarius, *Gr.* One.

Pezomachus? nigricornis, *Först.* One.

P. agilis, *Fab.* Common.

Eniscospilus repentinus, *Holmgr.*

Ophion obscurum, *Fab.* Several at the Gouffre. One on Vale coast.

O. luteum, *Fab.* Very common.

Schizoloma amicta, *Fab.* One specimen taken near Cobo.

Paniscus cephalotes, *Holmgr.* Not uncommon. Is well known as a parasite of *Dicranura vinula.*

Limneria sp? Several specimens of a species of *Limneria* bred from *Lufla lapidella;* the species not yet determined.

Exolytus lævigatus, *Gr.* Two.

Collyria calcitrator, *Vill. Lin.* Common in June. The well-known parasite of *Cephus pygmæus*, a species of saw fly injurious to wheat.

Exetastes osculatorius, *Fab.* Common, one of our most beneficial insects, the larva preys upon *Mamestra brassicæ* and other destructive insects.

E. guttatorius, *Gr.* Not uncommon.

Matacoelus flaviceps, *Ratz.* One specimen taken near Doyle's Monument. It is not on the British list.

Bassus lætatorius, *Fab.* Common.

B. exareotatus, *Holmyr.* One.

Pimpla instigator, *Fab.* Common.

P. oculatoria, *Fab.* Not uncommon.

Glypta scalaris, *Gr.* One female specimen, Petit Port.

Lissonota parallela, *Gr.* Not common.

L. bellator, *Gr.* Common.

L. sulphurifera, *Gr.* Two specimens at Moulin Huet Bay, August 5th.

L. lineator. One.

BRACONIDÆ.

Bracon minutator, *Fab.* Two taken at Richmond.

Apanteles glomeratus, *Lin.* Very abundant.

Aphidius rosarum, *Nees.* Common.

Chelonus oculata, *Fab.* One.

JERBOURG AND ITS FORTIFICATIONS:

A Contribution to Guernsey History.

BY MR. G. T. DERRICK, HON. SEC. G.S.N.S.

THE S.E. corner of Guernsey is a promontory about 1,500 yards from N. to S. On the E. is the little Russel (Le Petit Rueau), on the W. Moulin Huet Bay. On the E. the division is marked by a little inlet called Pied du Mur, immediately S. of Bec du Nez; on the W. by Petit Port, the most eastern part of Moulin Huet; the distance across, between these two points, is about 500 yards. The peninsula of Jerbourg thus formed maintains over a large part of its surface a height of over 250 feet.

This is the district to which I wish to draw attention in this paper. It has from the earliest times been used as a defensive position; its physical aspect favours this use.

Pied du Mur is one of the most interesting beaches in the island, and would be much frequented if there were a more convenient access. To reach it from the rocks below Bec du Nez, it is necessary to jump the last 6 or 8 feet; and to leave it on the south, one has to scale a similar rock-like surface; the name "Pied du Mur" is, therefore, very appropriate. On very rare occasions, when the furze in the valley has been cleared away, it is possible to come down to the stream, scramble along its bank and so reach the middle of the beach. On Bec du Nez will be observed a great hole overgrown and almost hidden by a thick mantle of sloe-bushes, brambles and fern. This is called the Smugglers' Hole; it opens out as a miniature Creux Derrible on the beach below. Immediately adjoining this is a fine cave with a floor of deep sand; it penetrates about 70 feet, but the entrance is obstructed by an immense boulder. Then come some natural arches communicating with each other; these, the members of the Society have christened "The Marble Caves."

South of the bay, the coast is formed by low cliffs, from which projects, for about 80 feet, a platform of rocks rising nearly to the present high-water level. Then comes St.

Martin's point with its beacon; then Telegraph Bay immemediately below the barracks, where the Jersey and Sark cables enter the sea. The extreme south point consists of the most picturesque rock-mass in the island, which forms one of the chief charms in the general view of Moulin Huet.* The point is called "Le Tas de Pois d'Amont," or the Pea-stacks, and the rocks are called the Apostle Rocks, or the Monastery-and-Monk Rocks, concerning which monk certain local traditions are told in Sir Edgar MacCulloch's book. The west coast is virtually inaccessible to Petit Port with its beach of firm sand, from which rises almost vertically a gigantic quartz vein. Parallel with this vein to the south are numerous fissures or narrow caves, one of which, after penetrating about 30ft., communicates with the face of the cliff above, another miniature Creux Derrible. The whole peninsula rises so abruptly as to be almost inaccessible from the sea; but in the platform of rocks on the east side is a narrow cove with deep water, so well sheltered that during the summer, pilots often kept a skiff there in readiness to board any vessel approaching the island on this side. From this cove, which is the spot to which the name Divette is given, a practicable path leads through the new fir plantation to the group of houses called La Buvée, just north of the isthmus. It is possible also to land on the beach at Petit Port, where a dangerous path gives access to the isthmus, though it is almost impossible to scale the cliffs to Jerbourg itself.

I wish to discuss the erections which, at various periods have been constructed to render this position, naturally so defensible, a safe refuge for the inhabitants of Guernsey in time of war, and in order the more satisfactorily to do so, I have endeavoured to collect all the information available on the subject. I have received most valuable assistance from Miss E. Carey, of the Vallon, and Mr. T. De Guérin, of Le Mont Durand, and have consulted Dupont's "Cotentin et ses Iles," the Bulletins of La Société Jersiaise, Tupper's History, &c.

According to my idea, the oldest of these fortifications are the earthern ramparts across the isthmus. These commence, on the west side, at the summit of the cliff at the head of the path from Petit Port, so much frequented by sand-eeling parties. Here, there are three embankments, the outer ones the deepest, the height from hollow to crest being about 8 feet; they extend in the direction of Doyle's Monument.

* Walter Huet was warden of the islands from 1367 to 1373.

On the east slope there are also three ramparts. The two northern ones are close together throughout, and run from near the Doyle column to the bottom of the valley running down from La Buvée to Pied du Mur. The third vallum, which is the deepest, diverges from the others at the well near Doyle's Monument, and continues to the edge of the cliff near Divette. They are simply earthern ramparts, the material from the trench being thrown up to increase the height of the bank.

On the highest ground near Doyle's Monument, they have been destroyed in the processes of road-making and cultivation, but there is no doubt that there were originally three trenches reaching from sea to sea. The two northern trenches are blocked and crossed by a bank about a third of the distance down; this bank carries the path to Divette, and is evidently of later and quite independent construction.

They have been called *Roman* entrenchments but without any authority for the name. Elsewhere* I have given reasons for concluding that the Romans had no permanent settlements in Guernsey and, if they had, the position at Jerbourg would have been a most unsuitable one for any camp they might establish to overawe the natives. A Roman garrison would never have prepared, as their last retreat, a position from which there was no possibility of escape, and in which, if besieged, they could have received no succour.

To us it may appear strange that the defences should have been carried along the *low* level to the bay, the defenders being thus exposed to attack from the immediately adjoining higher ground to the north; but they follow the shortest line from one inlet to the other, and missiles did not carry far in those days.

Perhaps in the course of their work, these ancient Guernseymen recognised this danger, and, to avoid it, made the innermost or southerly rampart diverge from the others keeping to the highest level, but I shall presently give reasons for thinking that this one may have been constructed at a much later period.

I have shown in a former paper† that Guernsey was inhabited at a very early period by a Celtic people who introduced domestic animals, cultivated the soil and maintained communication with the mainland. While the Romans were conquering the adjacent parts of Gaul, these islands obtained a large increase in population and material resources, and later were subject, in common with all maritime districts

* Transactions 1897, page 163. † Transactions for 1897, page 154.

in the Channel, to the incursion of Saxon pirates. As a consequence the population rapidly diminished, so that at the era of the missionary bishops, it had fallen to a very low ebb. It was to resist these Saxon incursions that (in my opinion) the inhabitants threw up these lines of defence, so that, if unable to check the invaders on landing, they might retreat here and save themselves and their cattle from destruction. These marauders never remained long in one place. In England, we read, they harried the country, burning, pillaging and killing, carrying off to their ships cattle and other plunder. They first remained over a winter, A.D. 450 in Sheppey, and later coming over in immense numbers, set up the Saxon Heptarchy.

No sooner had they become united under Egbert, than they were assailed in precisely the same manner by hordes of their Scandinavian kinsmen: Danes or Norsemen. For fifty years these ravaged the country, retreating to their ships generally on the same day; but about A.D. 828 they made their first permanent settlement in England; they also took possession of the north of France, called after them Normandy. Against such plunderers the inhabitants of the island, behind the embankments at Jerbourg, would be able to defend themselves until, their unwelcome visitors having again put to sea, they were free to return to their homes.

Entrenchments similar to these are found throughout England, Brittany, &c., and are there recognised as having been constructed by the Celtic inhabitants of the country. In Cornwall a great number of promontories are fortified in exactly the same manner as Jerbourg; for instance, Cape Cornwall and Gurnard's Head; but the projection on which stands the Logan Stone most nearly resembles ours, for there we observe "the remains of a triple vallum and fosse," the enclosure being called Treryn Castle, though no later defences were ever erected. In Guernsey it may be noticed that a *single* trench has been dug from sea to sea, across the headland, terminating in St. Martin's point; there are other examples of similar work at the north end and at the Hog's Back, in Sark, but the finest of the kind in this district is the "Hague-dyke," to the north-west of Cherbourg, cutting off the long peninsula terminating at Cape La Hague, the enclosure measuring several square miles.

It is impossible to fix any date for the construction of these lines, but the second or third century would be the most probable period. They most likely continued in use for military purposes until the 12th century, but when once Castle

Cornet was fortified, this latter always became the place of refuge and the last defence against any enemy getting possession of the island.

Mr. W. A. Luff has kindly supplied me with a manuscript note written by Mr. F. Lukis, who explored our dolmens, which may tend to confirm the idea that these trenches were made by Celtic people. The note says: "On the heights of Jerbourg in St. Martin's parish on the east side of the island was another manufactory of arrow-points. We have found some of these in the ancient military embankments which surround the column erected in 1818 to the memory of Sir John Doyle, Lieut.-Governor of the island. The quantity of flakes scattered in all directions, *especially in the embankments*, is enormous, and besides these and the perfect arrow-points occasionally discovered, there is so vast an amount of broken pottery of decidedly Celtic character mixed with them as to lead irresistibly to the belief that a very considerable cromlech existed here, which must have been replete with these interesting relics. We have also seen several stone celts and mullers from the vicinity."

In support of the Celtic origin of these lines, I may also quote from Pitt-Rivers's "Excavations in the Wansdyke"*: "Isolated encampments on tops of hills were simply places of refuge for some local tribe inhabiting the vicinity, to which they resorted when attacked by a neighbouring tribe. . . . (Later), tribes combined and threw up continuous lines of ditch and bank, probably surmounted by a stockade along the open country from an inaccessible position on one flank to some other natural defence on the other," exactly as we find at Jerbourg.

Tupper in his History and Dr. R. G. Latham in Ansted's Channel Islands speak of these entrenchments as Roman. The latter says (p. 429) "Of Roman remains there are few. . . . Across the isthmus of the peninsula of Jerbourg is a true Car-dyke, *i.e.*, a fosse connected with a fortification, the fortification bearing the Keltic name of Caer, as in Caernarvon, Carlisle, Caerleon and other towns in Britain. That this word is the first syllable in Jerbourg (as well as in Cherbourg) is almost certain." With great diffidence I dare to express a different opinion. The second syllable "bourg" is Teutonic, Anglo-Saxon in origin. A. S. burh, from byrig —an earthwork, hence burh—burg—a fortified town. Hericher in his valuable dictionary says: Bourg is connected with

* Vol. III., pages 7 and 8.

the Scandinavian berg—a hill, and on page 84 he writes: "Retrouver dans le nom latin de Carlovallum, le nom germanique de Carisbure (Cherbourg) qui en est la traduction;" but no one ever suggested that Jerbourg had a similar ancient name. Caer, a Celtic word, is not at all likely to be compounded with Bourg, a Teutonic one. Tupper merely calls them Roman without any argument in favour of it, but on the contrary brings forward these "Traces of a Roman encampment or fortification" as a proof that the Romans occupied the island. His words are very curious. At Jerbourg "Three distinct entrenchments one behind the other are supposed by many to be still visible. In the opinion of others, there never was any such Roman triple line of defence; but in place thereof, one commanding embankment, stretching quite across the isthmus." It only required to visit the spot to see that the triple line existed; but Tupper himself goes on to say "This earthen rampart was perhaps raised by Northmen or by natives." So we may fairly dismiss the idea of Roman construction. But M. Dupont, in his valuable book "Cotentin et ses Iles" (which ought to be in the hands of every student of ancient Guernsey history), states his idea that they are of Scandinavian origin. We must then examine the grounds for his belief. These Scandinavians are the Norsemen or Normans who ultimately obtained cession of Normandy from Charles the Simple in 912. It is quite evident that in order to carry on their system of plunder so far from their native country, they were compelled to have here and there stations, which they could use as a rendezvous or headquarters for preparing their expeditions, where also they could refit their vessels. One of these was the N.W. extremity of Contentin which was enclosed by the Hague-dyke, and M. Dupont asserts that Jerbourg was another*: a most useful centre for bands operating in the Bay of St. Malo. I consider that he conclusively proves that the former served as a great Scandinavian camp, but I think this is quite consistent with my belief that the embankments themselves had been *constructed* by an earlier, *i.e.*, by a Celtic people.

Dupont shows that the chief reason for seizing upon and using this position at the Hague-Dyke was that it contained: "The little harbour of Omonville, the best anchorage on all the coast, and the most frequented in Roman times." But a harbour is just what Jerbourg lacks. Divette would only accommodate one or two of their boats, and these

* Les Normands y exécutèrent leurs travaux accountumées et on peut suivre la direction du dick qu'ils y creusèrent.

could not be pulled up into safe quarters during the frequent gales, and Petit Port though a splendid sand for beaching their vessels, affords no beach above high water mark, and the path from it does not lead within the trenches; so that Jerbourg does not at all conform to the necessary requirements for a fixed settlement, for which purpose M. Dupont considers that it was used, viz.: "A camp into which no army of this period, no matter how powerful or how well organised, could have penetrated or could have threatened them;" one of the spots "consecrated exclusively by these pirates as their only permanent settlement, which favoured their method of attack and their system of defence, ... in which they prepared their excursions, deposited their spoil, and took refuge in case of necessity." M. Dupont considers that these Norsemen (circiter 850) had numerous camps in Guernsey, but I think he takes a wrong view of the situation, being in many cases misled by local names, and by want of detailed personal knowledge of the island. For example, a *Houque** is not necessarily a *fortified* hill; as far as I know, none of them shows signs of entrenchments; Ivy Castle is Norman or Mediæval, not Scandinavian, in construction. He finds the name *Knet* on Cochrane's map very significant, but unfortunately the name is *Cuet*.

I quite agree with M. Dupont that the Norsemen had a much greater influence on these islands than Guernsey historians have acknowledged, but I am inclined to put their occupation of Guernsey to a later date, *i.e.*, to the tenth century. In this way we can account for the numerous Scandinavian elements in our local topography. For example: As the name Jerbourg was given to this spot at this period, the term *Bourg* is an indirect proof that Teutonic, Saxon or Scandinavian people occupied the district long enough to make the name they gave it become the recognised and permanent name of the place. Jer-bourg corresponds with Jer-sey rather than with Cherbourg. Again: *Hou* is a common termination in these parts; *Ou* or *Hou*, Dupont gives as a Scandinavian word, and Hericher in his dictionary† says: "*Hou* or *Ou* (Scandinavian) Suffix commun dans la topographie avec le sens d'habitation, ex.: Lihou, près de Granville," Brechou, Burhou, &c., connected with the word *house*.‡

* Hericher, Vol. I., page 151. Hogue, hague, heu (Scandinavian)=une hauteur du bord des eaux . . . . d'autres caps sont des Hogues.

† Vol. III., page 48.

‡ Toutes les locations précitées dans les îles ou des presqu'îles: Jethou, Burhou, etc.

The occurrence of such terms justifies us in acknowledging a considerable Saxon, Scandinavian or Norse element in our population; the physical appearance of the inhabitants at the present day, as has frequently been observed, strengthens the belief; it would be a natural result of their frequent forays on the island during six centuries, and of their ultimate settlement here; but there is nothing to induce us to think that they found any necessity for throwing up entrenchments at Jerbourg or anywhere else, to protect themselves from the feeble Celtic natives.

It is singular that these islands, though containing a considerable population should have remained for many centuries quite independent of the surrounding states. The Church was the first to bring them into connection and bind them with other communities, and the connection was with Brittany rather than with Cotentin or Normandy. Guernsey is first introduced into authentic history in the sixth century when Childebert gave St. Samson, recently returned from christianising them, "certain islands in the sea on the coast of Normandy," among others Guernsey and Jersey. Politically they remained independent until William Longsword (931 to 942), under whom we find half of Guernsey, viz.: St. Sampson's, St. Peter-Port, St. Andrew's, the Forest and Torteval belonging to the Count of St. Sauveur (in Normandy); while the Vale, Câtel, St. Saviour's and St. Peter-in-the-Wood belonged to the Lords of Briquebec.* The Norsemen now settled in the island, acknowledged the authority of these continental over-lords, and Norman customs, laws and language became established, but the islands were not taken under the direct management of any of the Dukes of Normandy until King John on January 12th, 1200, named Pierre de Préaux, who belonged to one of the most distinguished families of Haute Normandie (their castle is a short distance from Rouen), Seigneur Dominus de Jersey, Guernesey, Alderney and their dependencies.†

As long as the Channel Islands formed part of the same principality as the adjacent parts of France, they were of no special importance, and needed no fortifications; but when John lost possession of Normandy in 1204, but retained the islands, steps were taken from time to time to secure them

* Dupont, page 174; but Tupper says (page 37) these formed part of the fief of Ansquetil, vicomte de Bessin (or Bayeux).

† Dupont, Vol. I., page 425.

from capture, and then we find these Anglo-Normans taking advantage of the natural strength of Jerbourg, extending and strengthening the defences there.

But the Normans constructed *castles*, not camps. They selected high ground, preferring a hill, either surrounded by water, or rising so abruptly as to be accessible only in one direction. The castle consisted of a donjon or keep, the strongest position into which the garrison might retire even after all the outer works had been carried. This was surrounded by an open space, ballium or court, which in turn was enclosed by walls, having towers at intervals, the strongest being those protecting the gate or principal entrance. This again was surrounded, if possible, by a moat or trench, a draw-bridge across which formed the only access to the castle. The walls were often 12ft. or more in thickness, the whole structure so massive that it would be very difficult to remove all trace of the building if once erected.

Four Guernsey castles are named in the old charters and other documents: the Vale Castle, the Château de Marais (or Ivy Castle), Castle Cornet and the Château de Jerbourg; it is with this last that we are at present concerned. My suggestion is, and I maintain that the historical facts and documents support it, that there never was a true castle, keep, towers, walls, &c., at Jerbourg.

We have the *name* Château de Jerbourg; so we have Château d'Icart, yet no one suggests that there ever was a veritable castle at Icart; so in Cornwall we have Treryn Castle, but no building. Had there been a true castle as suggested, some remains of it must have survived; no one would have taken the trouble so completely to destroy such an extensive and massive structure that not a vestige, even of the foundations, can anywhere be discovered. Yet it is asserted that it existed and afforded accommodation to all the inhabitants of the island, and continued in use as late as 1627.

The existence of the castle is supposed to be proved by ancient documents; I proceed, therefore, to quote those in which Jerbourg is referred to.

The oldest* is from the assize rolls of 27 Edward I., 1299. In it, Matthew De Saumarez, a minor, the son and heir of Matthew De Saumarez, deceased, together with Thomas d'Estelfeld and Robert Blundel, guardians of the said Matthew, came before the justices and acknowledged

* Supplied me by Miss Carey.

that he held his tenement in the said Island, by the homage of the lord, the King in chief (*i.e.*, he held directly from the King), and by the serjeanty of being the third cup-bearer of the King, so often as the King should come to that island, and as long as he should remain there; and acknowledged that he owed the King, for his relief, 60 shillings and one penny of small tournois.

Then in 1319 we have in the Exchequer Accounts, 12 Edward II.*, "And he summoned Mattheu de Saumarez, Thomas d'Estfeld, Alice his wife, &c., to answer the King by what warrant they claim to have wreck of the sea, throughout all their land of Gereborough . . . . and the custom of mackerel . . . and free warren in all their land of Gereborough, &c." They come and say that they hold in pourparty (in common as coheirs) of the inheritance of a certain Nicholas de Saumarez, grandfather of the said Matthew and Phillipa; and as to all the liberties, they say that they hold them from the time whereof no memory exists. He was again summoned to prove his rights in 1323.

So far then we have proof that Jerbourg belonged to the De Saumarez family from very old times. Guernsey historians favour the idea that the said Nicholas De Saumarez was made cup-bearer to the Dukes of Normandy and received Jerbourg as his guerdon for services rendered to Duke Robert, when in 1029-30 his fleet was driven to Guernsey (Jersey historians say Jersey) and he himself compelled to pass a fortnight in the island.

But no castle existed down to this date. Tupper† shows this clearly under date 1328. "The Federa contains a mandate in Latin to Johanni des Roches, keeper of the islands: Guernsey, Jersey, Alderney and Sark headed: "De Castro vocato Girburg in insula de Gerneseye perficiendo." By this mandate it would seem that the Castle of Jerbourg had only recently begun to be built: "nuper inchoatum fuit ad construendum," and was not finished although Edward II. (1307 to 1327) had ordered that it should be completed out of the revenues of the aforesaid isles."

Miss E. Carey gives me the same information; she puts the date August 1328. "The King learns that the Castle of Jerbourg is not yet completed, &c., and orders John des Roches to cause the castle to be made from such issues

* Page 36.

† Ancient petitions published by the Société Jersiaise, 1902, Page 20.

and goods, as speedily as possible by the view of the men of those parts."

Two petitions to the King dated 1328-1329 (which I take from Ancient Petitions, &c., published by the Société Jersiaise) give the reasons of the inhabitants for having this castle constructed, although Castle Cornet was built. They say that the islands are very important because they are the only refuge between England and Gascony, wherefore the people of France covet them very much; and they especially request that the fortress of Gyrbourg may be completed because: "Your people of this island cannot take their goods into the ancient Castle (Cornet) enclosed by the sea; that the latter was suitable and ordained to defend and guard the port from the enemies," and that what was done at Gyrbourg was "at the costs and great grievance of your people."

The works carried out at this date constitute the Castle of Jerbourg: it is necessary therefore carefully to consider the meaning of the documents.

A petition, No. 12,098, to our Lord the King, shows that "You have by your writ commanded Sir John des Roches, keeper of your isles, to enquire fully . . . . . Whether a place which is called the Castle of Gerbourkes is the right and inheritance of Macie De Saumarez, the which place . . . . at the request of your common people for fear of war, was enclosed for the safety of your isle and your people . . . . . to find out if this be to the prejudice and damage of you and of your people" . . . . . He petitions that he shall have deliverance of the said writ.

The next document is supplied to me by Miss Carey; it is from the Exchequer Accounts, 4th Edward III. (1331):

"Matthew De Saumarez, par le congé de Seigneur Edouard, notre père, eust naguères fortifié une certaine place appartenant au dit Matthew appelée le Château de Gerbourk . . . . . pour la protection de la dite communité et de leurs biens en temps de guerre, avec les fosses et murs à la manière d'un château . . . . . Voulons permettre au dit Matthew et à ses hoirs . . . . de la tenir à perpetuité pour les mesmes services qui iceluy Matthieu et ses prédecessures ont jadis tenus la dite mesme place, avec les libertés, &c., de nous par le serment des tous hommes de la dite isle, 12me Juillet, 4me de notre régne, avant Jean des Roches par brève du roy pour Matthew De Saumarez du Château de Gerbourk avant Nicholas Blondel, John Le Marchant, &c."

Miss Carey adds: "These extracts show that though the De Saumarez held Jerbourg before 1300, the Castle does not seem to have been built before 1331, all the witnesses, 12 men of St. Martin's and 12 jurats witnessing, which they would not have done had there been no castle."

On this I have to point out that the document expressly states that "He had fortified it with trenches and walls *after the manner of a castle*, and this is exactly what we find by examining the locality, *i.e.*, a great bank and trench extending across the isthmus; no actual castle with keep, towers, gates, &c., is even suggested. There had been no time in the interval to have allowed such a building to be erected.

Then again, notice "a place *called the castle* of Jerbourg," not an actual castle, but something which, being in the nature of a defensible position, might be spoken of as a castle.

Mr. De Guérin supplies me with an extract from Bulletin 16 (1891) of the Société Jersiaise: "Documents relatifs aux attaques sur les isles de la Manche," which shows that payments were made to Thomas de Lynedon, Connétable et 12 arbaletriers (forming, apparently, the garrison of the Château de Jerbourg in 1337), and in the year 1338 payments are repeated to the same. At the same period Castle Cornet had a garrison consisting of Messire Simon de Goldingham, his son and 6 men-at-arms and fifty archers.

Mr. T. De Guérin sends me from the Close Rolls, Edward III.'s reign, 1342, similar information to that extracted by Miss E. Carey from MSS. in possession of Gaspard Le Marchant, Esq., of Haye-de-Puits, copied by Eleazer Le Marchant in 1704, as follows: "Le Roy à Thomas de Hampton, Gouverneur de nos isles, comme aussi voit que nous aurions fait somptueusement reparer (ainsi que nous l'a fait entendre) un certain château appellé Gerebrok pour la sauvegarde de nos fidèles sujets . . . . nous vous commandons de faire assigner à chacun d'iceux tant aux plus grands qu'aux plus petits, certains departements dans le dit château ayant égard à la qualité des personnes et à la quantité de leurs biens, et de les obliger de le defendre et de fournir les provisions chacun dans son departement lorsqu'il y aura apparence de guerre."

On this document Mr. Le Marchant makes these observations: "Tout le contour de l'ordre me semble très-clair, excepté ces deux mots 'Le Château de Gerbourk' (the château de Gerbourg) cependant il ne faut s'attacher trop rigoureusement à la lettre, mais entendre le terrain contenu

par dedans des murailles de cette fortresse . . . tout l'enclos de Gerbourg ; je veux dire tout le terrain plainforme des coteaux qui joignent à la mer jusqu'a la maison de Guet. Et remarquons que ce château etoit (à parler plus précisement) une citadelle avec tout ce terrain qui lui servoit d'une esplanade bien étendue."

From the Calendar of Patent Rolls under date 1351, we have : "To Sir John Mautravers, keeper of the island : We, having heard that our Castle of Jerbourg, which the people of Guernsey had been accustomed to use as a place of refuge in time of war, had been destroyed, have ordered that our town of St. Pierre-le-port should be enclosed with a strong wall."

We thus have evidence that a small garrison was maintained at Jerbourg during the war which Edward was then waging against France, and that all the inhabitants of the island were in duty bound to defend the place against the attacks of the King's enemies. This was the case in all countries where the feudal system prevailed : all the inhabitants were bound to take up arms in case of invasion.

It is curious to notice that at this very period when these 24 witnesses declare that the castle of Jerbourg existed, and when it had been so sumptuously repaired, Guernsey was invaded by a French force under Béhuchet on September 8th, 1338 ; the enemy burned all the island except one castle, viz., Castle Cornet, and that no effort was made to garrison and hold this fortress at Jerbourg ; the words are : "Insula etiam de Gnernesiaco mediante vorante flamma, excepta uno castro qui ibi erat, totaliter consumpsit" (Dupont, page 268, taken from Contin. de Guill. de Nangis). Perhaps it was on this occasion that the buildings at Jerbourg were destroyed, as reported to the King under date 1351.

We have evidence, at a somewhat later date, that a Square Tower was built within the trenches at Jerbourg, the only building of the nature of a castle ever mentioned as existing there. It would serve as quarters for the garrison (if one were still maintained) and as a capital look-out for following the movements of the enemy's ships, and any attempt at landing. It occurs in the accounts of Nicholas de la Sale, King's Receiver, under date 1372-3. Colonel J. H. C. Carey copied the extract from the original documents at the Record Office, and both Miss E. Carey and Mr. De Guérin have placed their copies at my disposal. It runs thus : "Item VIII sols est. es bremaux qui deschargirent une charge de froment de la tour quarreie de divette de

Gierbourg et la portirent es greniers de Cornet et montirent* une charge de siegle de divette en la tour quarreie de Gierbourg. Item V sous qui est es bremaux† qui chargirent de la grange au bateil‡ et le montirent de divette en la tour quarreie de Gerbourg."

The translation is: "8 sous sterling were paid to the workmen, who discharged a load of wheat from the square tower of Divette at Jerbourg and carried it to the granaries of Castle Cornet, and brought up a load of rye from Divette to the square tower at Jerbourg."

In this same year, 1372, according to most historians, (I should rather favour 1371), occurred the famous descent of a French force under Yeuwains (Ivan or Evan) de Galles and Johans de Roy, bourgignon. Froissart gives the account of the fight near Vazon, after which the garrison retired towards Castle Cornet, and distinctly says that at this time there was no other fortress in the island; his words are: §"Depuis cette disconfiture n'y eut riens retenus sur tout le pays, car il n'y a nulle fortriche."

Thus, at no one of these numerous invasions do we find the Castle of Jerbourg held as a fort; on the contrary, in every case the garrison appears to have deserted it and joined the main body at Castle Cornet.

In 1373, Guillaume d'Asthorp is appointed to administer Guernsey, Sark, Alderney, Herm, Castle Cornet and Beauregard Tower. Now that St. Peter-Port had been enclosed by a wall, Beauregard Tower (at the top of Tower Hill) is mentioned as the second fort of the island; had Jerbourg been so strong a castle and fortress, it would have been mentioned.

I consider that none of these documents prove that a castle proper, *i.e.*, an outer wall, with gate and towers and an inner keep, was ever erected on this locality. Mr. Le Marchant, and Mr. Tupper,‖ the historian, both agree in this opinion, asserting that the term château was applied to it because it was a fortified spot, enclosed by the wall erected in 1328, and trenches outside the wall. Castle Cornet is the only one referred to as being besieged, and as this

* Miss Carey has "et à Mont Crevelt." This appears to me a mistranscription for "montirent" as in the second extract.

† *Bremaux* is an unknown word; the accounts come under the head *bremanage*, so it must mean labourers of some kind.

‡ Grange au bateil=Barn of the boat. Bateil=bateau, just as chastell=chateau.

§ Froissart: Brussels edition, 1869, by Kervyn de Lettenhove: Vol. 8, page 140.

‖ Page 36: Under date 1328, "We think that the Castle was never worthy of the name, and that its chief defence consisted of one outer earthen embankment.

latter occupied so much stronger a position, why should great works have been carried out at the less defensible site?

Notice, too, that we have orders that certain work should be done, none say that it was done.

Passing on to much later times. The present Lord De Saumarez found, among the Cottonian manuscripts in the British Museum, a map or bird's-eye view of Guernsey, Herm and Sark, taken in the reign of Henry VIII; this, Miss E. Carey exhibited to the members of this Society. On this map Castle Cornet is marked as the principal fortress, the next in importance are Ivy Castle and the Vale Castle, then one at the Becquet, overlooking Fermain Bay; smaller stations or towers are marked at Beauregard and Jerbourg.

Then in Queen Elizabeth's reign the fortifications of Guernsey were once more overhauled, but no mention is made of any works at Jerbourg; Castle Cornet was very considerably strengthened, the main entrance erected and the outer walls built much as we see them at present.

Lastly, in 1627, when Charles I., urged on by Buckingham, was going to war with France, Jerbourg is mentioned in the Acts of the States, pages 88, 100 and 144, thus: "Que tous ceulx qui ont des charettes feront chacun une journée de charoy de pierres tant pour le bouchement du Havre que pour le Château de Jerbourg," and in 1629 the island was taxed in money and in labour for said fortifications of Jerbourg, "du consentement du Lieutenant-Colonel Peperel, principal ingénieur de sa Majesté, envoyé exprès en cette île pour faire faire les dites fortifications."

Even to the present day Miss E. Carey assures me that there are persons in St. Martin's parish who have to pay chef-rents of oats to keep in repair the famous Castle of Jerbourg.

I consider this justifies me in saying that similarly in 1627 and 1629 the money and works were expended on a non-existent castle, for if it stood up to 1629 surely some records or ruins of it could be found. My view is borne out by the contemptuous expression used by Heylin who visited Guernsey as chaplain to the Earl of Danby, in March, 1629. In his *Survey* he says: "The flourishing beauty of the Castle (Cornet); I say *the* Castle, as it may so be called by way of eminency; that in the Vale, and those poorer trifles all along the coasts not any way deserving to be spoken of."*

Turning now to the spot itself and collecting the evidence still extant there, we find:—

* Tupper, page 219.

A line of defence, distinct in structure from the ancient Celtic ones, lying a little to the south of them; it reaches from near the verge of the cliff on the west across the isthmus where the monument now stands, and stretches eastward, overlooking Divette.

The position is characteristic of Norman strongholds; almost inaccessible on the east and west, it runs along the highest ridge.

Approaching Jerbourg along the road, one immediately notices how much higher the ground here is than along any other line; it commands the position from which alone an attack could be made. The mound on the west is from 8 to 20 feet above the land in front of it; it is faced with rough masonry of large stones, smooth surfaces outward. It could never have served as the foundation for any heavy building. On the east the rampart is much higher, but is not faced with stones. This is the castle. The southernmost of the three trenches is immediately in front of this position. On the east it is not parallel to the other two, but keeps close under the earthern rampart until it reaches a bold quartz rock, rising 40 feet above it, then it turns abruptly northward, and runs down to the cliff just south of Pied du Mur. I am quite willing to put down this third trench as the one made in the 14th century to give extra strength to the fortifications; it appears intimately connected with the more modern work.

Nothing can be discovered to suggest the existence of any great castle here.

In recent times, Jerbourg receives some notice. When Sir John Doyle was appointed Lieutenant-Governor in 1803, he immediately proceeded to strengthen the defences of the island; he erected batteries on every point and in every bay. These are still to be seen. There is a large circular one immediately below Jerbourg barracks. In 1805 the garrison of the island was increased to 4,000 infantry and one company of artillery, and it became necessary to erect wooden buildings for their accommodation; one set of these barracks was at Jerbourg. The present permanent barracks replaced these in 1813.

At about this time, in improving the road leading into this district, the trenches and the stone-faced embankment on the highest level were destroyed.

In the map mentioned before, drawn in the reign of Henry VIII., a tower is marked at Jerbourg, which may be the Square Tower of the ancient documents. Curiously,

the name Gerbourge is on that map given to the fortification at the Becquet (Fermain), where a tower or watch-house still stood in 1786; but before 1816 it had been removed and the present beacon erected.

In 1787 we have a very accurate map prepared by the military authorities, showing all the fields, buildings, &c., in the island. On this a circular mark is made at Jerbourg, a little to the west of where Doyle's Monument now stands; it is the only one in this part of this island. In 1806, according to Deschamp's "Sailing Directions for Guernsey," *Saumarez Tower*, a most useful landmark in this district, was pulled down; some think this refers to the tower marked on the 1787 map. In 1810 we have Capt. White in charge of a signal-station at Jerbourg, with quarters in a tower* close behind, as shown by a picture still in the possession of his descendants. The plan of this tower is doubtful, it may have been oblong or hexagonal, certainly not round. The tower was then in a dilapidated condition, having a crack from battlement to base; it is evidently not an ancient building. A storm in 1812 intensified the damage, so it was pulled down, and on the site, with the old material, was built a watch-house, oblong in plan, like those at Sommelieuse, Les Thielles, &c. This is marked with an oblong dot in Cochrane's map of 1832, and the ruins can still be seen. Deschamp's "Sailing Directions" say that Doyle's Monument served navigators in place of the tower destroyed. Doyle's Monument was voted by the States in 1816 as a recognition of the respect, gratitude, esteem and admiration of his high and distinguished talents during his long administration. It was commenced in 1816 and intended to be 120 feet high. It had reached a height of 70 feet when, on September 29th, 1817, during a violent storm, it was levelled to the ground. It was re-erected, but of a less height, and when Sir John re-visited the island in 1826, he saw the monument which the people of Guernsey had erected to commemorate the noble works of public utility he had carried out during his 14 years of office.

There is a difficulty in reconciling these various statements. My idea is that the tower marked on Henry VIII.'s map was the Saumarez Tower, and that it was the one taken down in 1806; that another tower in a different position

* The members of the Société Jersiaise suggest that Jerbourg barracks occupy the site of this signal-station and tower, but no signal-station or tower stood on that site. In the map accompanying Jacob's History (1814) the signal-station is marked where I have placed it, and besides, Captain White frequently notes (1810-12) that he signalled Icart and Castle Cornet from his station, and Icart cannot be seen from the barracks.

was built in 1786, as mentioned on page 16 of a manuscript book by M. J. A. N. De Magnac, in the possession of Miss E. Carey; that this is the tower marked on the 1787 map, and again with the signal-post adjoining, on the map of Jacob's history under date 1814; that here Captain White had his quarters.

In the course of exploring this district, I have found four curiously shaped structures; two on the west side were examined by members of this Society during the excursion in June; there are two others on the east slope. They are all similar in arrangement, the ground-plan being a segment of a circle, the roof arched and partly constructed of stone work. Those on the west are small. It was suggested that they might have been stables, but they were not large enough even for a sheep-fold. Those on the east are larger, and are built in connection with the southernmost of the trenches. All are constructed with considerable care, the walls of native rock and stone-work; but the occurrence of pieces of brick in two of them shows that they are of modern origin. My idea is, that they were a kind of sentry-box or permanent shelter into which men on patrolling or sentry duty could occasionally retire, so I should date them about the beginning of the nineteenth century, when real militia duty was cheerfully done by the inhabitants of Guernsey, who were in constant dread of an attempt at landing by the French.

In conclusion, members of this Society and everyone interested in antiquities, while rejoicing in the prosperity of Guernsey, and acknowledging the enterprise displayed by its inhabitants in bringing so large an area under cultivation, must feel thankful that a few spots have been left almost in a state of nature, and so some of our finest dolmens and these ancient trenches have been preserved to throw light upon our ancient history.

FURTHER ADDITIONS TO THE FLORA OF ALDERNEY.

BY MR. E. D. MARQUAND, A.L.S.

It gives me pleasure to be able to present to the Society another important addition to the recorded Flora of the island of Alderney.

During the past year only four new Flowering Plants have come under my notice,—three of them casuals, but the fourth, *Inula Conyza*, undoubtedly a native I think, as it occurs in Guernsey, Sark and Herm, and is fairly common in Normandy. The discovery of a *Chara* in an old quarry pool at Corbelets was a pleasant surprise, because I had no idea that the *Characeæ* were represented in Alderney at all.

Since the *Flora of Guernsey* was published, I have added thirteen mosses to the Alderney list, of which six are new to the Sarnian area. A very beautiful *Hypnum*, with stems ten inches long, which I found in the same pool as the *Chara*, puzzled me greatly both when growing, and when examined microscopically; but Dr. Braithwaite, to whom I sent specimens, recognised it as the variety *paternum* of *Amblystegium Kneiffii*, an extremely rare British moss. Another excellent find was *Tortula canescens*, a very rare species, closely resembling some forms of *T. muralis*, but readily distinguished by the long tubular peristome.

Such rarities as these (and *Bartramia stricta*, which is recorded in my book) amply compensate for the absence of several widely-distributed and common species, and show how much is to be found by persistent research, even in one of our smaller islands. The present list raises the number of mosses recorded for Alderney to 106 species.

Last year I added 62 Marine Algæ to the Alderney list, and this year I am able to increase the number by fourteen more, all of which, except three, are new to the Sarnian area. For their identification I am again indebted to my friend

Mr. E. A. Batters, F.L.S. I would strongly recommend all those who are interested in Seaweeds to procure Mr. Batters' recently published admirable "*Catalogue of British Marine Algæ*," which is not only a complete list of all the species known to occur on the shores of the British Isles (including the Channel Islands), but is also a most useful guide to the localities where they have been found. In this valuable work Guernsey and Alderney are largely represented.

In the course of last spring and summer I devoted special attention to the study of the Fresh Water Algæ of Alderney, and the list which I have compiled is considerably longer than was anticipated when I commenced. It comprises 72 species, more than half of them unrecorded for our area, so that in this section of the flora Alderney, at the present time, holds the proud distinction of heading the list among the Sarnian islands. The stone drinking-troughs for cattle, which are scattered about in various parts, and the little pools in abandoned quarries, have yielded many interesting things; but as there are no salt marshes or brackish ditches in the island, species affecting such habitats are of course entirely absent.

The exceedingly small variety of Desmids is quite as noticeable here as it is in Guernse . Only nine species (confined to two genera) have occurred to me, although I have examined gatherings from, I believe, every spot in Alderney where Desmids would be likely to occur. If there were no Desmids at all, one would ascribe it to the quality of the soil or the water; but at least two of the species (*Cosmarium Botrytis* and *Closterium acerosum*) attain a healthy development, and occasionally occur in the greatest profusion. I mentioned in the *Flora of Guernsey* (p. 38) what appeared to me to account in a great measure for the scarcity of Desmids in Guernsey; but in Alderney I think the deficiency must be attributed to some different cause altogether, though what that cause may be remains a puzzle to me at present.

In the list which follows all the plants which are new to the Sarnian Islands are distinguished by the prefix of an asterisk.

***Glaucium phœniceum,** *Crantz.* One plant in a garden at Platte Saline, belonging to Capt. T. Broughton, R.E. This is the first record of this casual for the Channel Islands.

Lepidium sativum, *L.* One plant on a rubbish heap on Butes Hill.

Melilotus officinalis, *Willd.* One plant on the wayside at the top of Butes Hill.

Inula Conyza, *DC.* About a dozen fine plants on one part of the cliffs towards Le Becquet. Truly native, I believe, in this locality. A very rare plant in all the Channel Islands.

Chara vulgaris, *L.* Abundant in a pool in the large disused quarry at Corbelets. Messrs. H and J. Groves have identified the plant as the var. *longibracteata.*

MOSSES.

***Archidium alternifolium,** *Schp.* On the cliffs west of Trois Vaux, and near La Chue; also on the common by Fort Houmet.

Campylopus pyriformis, *Brid.* On earthy banks in Rose Farm Valley.

Pottia Heimii, *Furn.* Cliff bank, Crabbie Bay.

***P. viridifolia,** *Mitt.* Cliffs near La Chue.

***P. Starkeana,** *C.M.* On a hedgebank near the Longy Road.

***Tortula canescens,** *Mont.* Cliffs near La Chue.

Barbula lurida, *Lind.* On a wall near Helcke's Explosive Factory.

Weisia microstoma, *C.M.* On the common by Fort Houmet, and on Mauney Hill.

Physcomitrium pyriforme, *Brid.* Rose Farm Valley.

Bryum inclinatum, *Bland.* Mauney Hill.

***B. pallens,** *Sw.* Quarry at Corbelets.

B. cæspiticium, *L.* Cliffs at Trois Vaux, and on Mauney Hill.

***Amblystegium Kneiffii,** *B. & S.* Plentiful in a quarry pool at Corbelets. Dr. Braithwaite, who examined specimens, calls it a rather weak form of the var. *paternum,* Sanio.

MARINE ALGÆ.

***Plectonema terebrans,** *Born. & Flah.* On *Trochus* shells, Platte Saline.

Calothrix crustacea,** *Thur.* Platte Saline, associated with ***Rivularia atra, in crevices of rocks near high water mark.

Rivularia Biasolettiana, *Meneg.* In a rockpool under a dripping cliff below Fort Albert.

***Rhizoclonium riparium,** *Harv.* Platte Saline.

***Ectocarpus Stilophoræ,** *Crn.* Platte Saline, growing between the cortical cells of *Leathesia crispa.*

Myrionema punctiforme, *Harv.* Alderney (Batters' *Catalogue*).

Cystoseira granulata, *Ag.* Alderney (Batters' *Catalogue*).

***Erythrotrichia Welwitzschii,** *Batt.* On *Trochus* shells, Platte Saline.

***Acrochætium virgatulum,** var. *minutissimum,* Batt. (*Callithamnion minutissimum,* Kütz). On Zostera leaves, Clanque Bay and Platte Saline.

***Nemalion multifidum,** *J. Ag.* Alderney (Batters' *Catalogue*).

***Gelidium pusillum,** *Le Jol.* Platte Saline.

***Laurencia cæspitosa,** *Lam.* Platte Saline.

***Monospora clavata,** *J. Ag.* Alderney (Batters' *Catalogue*).

***Peyssonelia atropurpurea,** *Crn.* Alderney (Batters' *Catalogue*).

FRESH WATER ALGÆ.

***Urococcus insignis,** *Hass.* On the moor by Fort Essex, scarce.

***Palmella mucosa,** *Kütz.* Streamside, Clanque cliffs. Marsh at Val du Sud.

Porphyridium cruentum, *Näg.* At the base of walls, and on damp earth in Reuter's Valley and several other places.

***Botryococcus Braunii,** *Kütz.* In a water-trough at Tolval. Millpond in Rose Farm Valley.

Rhaphidium falcatum, *Rab.* Water-trough in Reuter's Valley, abundant; mostly solitary cells.

Protococcus viridis, *Ag.* On tree-trunks in the Terrace. On the ground, Crabbie Bay.

***Chlorococcum humicolum,** *Rab.* Mauney Quarry.

Scenedesmus obtusus, *Mey.* Frequent in some of the water-troughs. The character that the cells are "remote from one another" is by no means constant.

***S. acutus,** *Mey.* Plentiful in the water-trough at Trois Vaux.

S. quadricauda, *Breb.* Common. In some pools the var. *ecornis*, Ehr., is more plentiful than the type.

Pediastrum Boryanum, *Meneg.* Rather common in the pool in Mauney quarry.

P. ellipticum, *Hass.* Mauney quarry pool, rare.

***Characium Sieboldi,** *Br.* Growing plentifully on *Stigeoclonium protensum* in the pond by Rose Farm.

***C. tenue,** *Herm.* Very abundant on filaments of *Cladophora glomerata* in the Rose Farm pond.

Zygnema cruciatum, *Vauch.* In a roadside puddle at Corbelets Bay.

***Spirogyra nitida,** *Kütz.* Marshy pool, Trois Vaux.

***S. mirabilis,** *Kütz.* Old quarry pool below Fort Essex, fruiting abundantly. This is the plant of Petit's monograph.

***S. varians,** *Kütz.* Old quarry, Clanque Bay. Abundantly fruiting at Val du Sud.

S. porticalis, *Clev.* Marsh on Clanque cliffs, fruiting. Water-trough near Essex House, abundantly in fruit.

***Sirogonium sticticum,** *Kütz.* Marsh at the head of Val du Sud, fruiting.

Mesocarpus sp. I have found more than one species belonging to this genus in Alderney, but in the absence of fruit it was not possible to determine them.

Vaucheria sessilis, *Vauch.* Longy Pond.

***V. Dillwynii,** *Ag.* On moist streamlet banks in Reuter's Valley.

Cladophora glomerata, *Kütz.* Quarry pool, Clanque Bay. Spring on the cliffs near La Chue. Pond by Rose Farm.

***Œdogonium Rothii,** *Prings.* Quarry pool below Fort Essex.

***O. pluviale,** *Nordst.* Same locality as last species.

***O. capillare,** *Kütz.* Quarry pool opposite Corbelets Bay.

***Ulothrix variabilis,** *Kütz.* Abundant in quarry pools on the Becquet Cliffs and below Fort Essex.

***U. parietina,** *Kütz.* At the base of the wall of the old churchyard.

Chroolepus aureus, *Kütz.* Growing on *Parmelia* in the old quarry below Fort Essex.

Stigeoclonium tenue, *Ag.* In a water-trough, Tolval.

S. protensum, *Kütz.* Water-trough at Trois Vaux. Pond by Rose Farm.

***Draparnaldia glomerata,** *Ag.* In the water-trough at Trois Vaux, scarce.

***D. plumosa,** *Ag.* Plentiful and fine in a water-trough between Rochers and New Town.

***Chætophora pisiformis,** *Ag.* On the sides of a water-trough on the cliffs below the old mill.

Chætophora endiviæfolia, *Ag.* Under trickling water at Tolval, below the new plantation.

***Coleochæte scutata,** *Breb.* Attached to leaves of aquatic mosses and other water plants in the pool in Mauney quarry, plentiful.

***Aphanochæte repens,** *Braun.* Plentiful on an *Œdogonium* in a quarry pool on the cliffs near Le Becquet. Abundant on *Cladophora glomerata* in Rose Farm pond.

Chroococcus turgidus, *Näg.* Quarry pool, Becquet cliffs. Dripping rocks under Fort Albert.

***Gloeocapsa polydermatica,** *Kütz.* On the moist sea-bank under Fort Albert.

***Microcystis marginata,** *Kirsch.* Old quarry pool below Fort Essex.

***Aphanothece stagnina,** *Rab.* Pool in the old quarry at Clanque Bay.

***Nostoc muscorum,** *Ag.* Growing among mosses on a wall in Moriaux Road.

N. commune, *Vauch.* On stones, Trois Vaux.

***N. sphæricum,** *Vauch.* Longy Pond, scarce.

***N. cæruleum,** *Lyng.* On aquatic mosses, Mauney quarry. Common in the pool in Corbelets quarry.

***Anabæna oscillarioides,** *Bory.* On the shore at Fort Houmet, at the roots of *Glaux* and *Juncus.*

Cylindrospermum macrospermum, *Kütz.* On moist earth, Reuter's Valley.

***Spirulina Jenneri,** *Kütz.* Quarry marsh, Clanque Bay, very scarce.

***Leptothrix parasitica,** *Kütz.* Quarry pool opposite Corbelets Bay, growing on *Œdogonium.* Filaments exceedingly slender.

Oscillaria tenerrima, *Kütz.* Marsh at Val du Sud. Water-trough on the cliffs below the mill. Margin of Rose Farm pond.

O. tenuis, *Ag.* Abundant in the old millpond in Rose Farm Valley.

***O. antliaria,** *Jurg.* Sides of water-trough at Martin's Bridge.

O. limosa, *Ag.* On the margin of Rose Farm pond, intermixed with *O. tenerrima.*

O. nigra, *Vauch.* Abundant after rain on the roadside in the Valley. Millpond in Rose Farm Valley. Under the drip of the water-trough above Rose Farm.

***O. nigro-viridis,** *Thw.* On the shore at Fort Houmet, among *Glaux* and *Juncus.*

O. Frolichii, *Kütz.* Mauney quarry pool. Tolval, intermixed with other algæ. Millpond in Rose Farm Valley. Quarry pool below Fort Essex. Cliff marsh at Clanque.

***Microcoleus gracilis,** *Hass.* On the shore by Fort Houmet, intermixed with the next species.

***M. terrestris,** *Desm.* Shore by Fort Houmet, among *Glaux.* Abundant after rain on the roadside at Corbelets Bay and Longy Road.

***Tolypothrix ægagropila,** *Kütz.* Abundant in the pool in Mauney quarry. Quarry pool, Clanque Bay.

T. coactilis, *Kütz.* Plentiful in Longy pond. Quarry pool, Clanque Bay.

Rivularia granulifera, *Carm.* Plentiful on a dripping cliff in Clanque Bay.

***Chantransia pygmæa,** *Kütz.* On the sides of the water-trough in Reuter's Valley.

DESMIDIACEÆ.

***Cosmarium pyramidatum,** *Breb.* In profusion among tufts of *Œdogonium* on dripping rocks under Fort Albert.

***C. bioculatum,** *Breb.* In a water-trough on the cliffs below the old mill, scarce.

***C. undulatum,** *Cord.* Pool in Mauney quarry, scarce.

C. tetraophthalmum, *Kütz.* With the last species, also scarce.

C. Botrytis, *Bory.* In great profusion in a cliff quarry pool towards Le Becquet, and in the Mauney quarry pool. Moderately plentiful in the marsh at Clanque, and in the old quarry below Fort Essex. Less common at Longy Pond, Val du Sud, Corbelets, and several other localities.

Closterium Lunula, *Müll.* Cliff marsh at Clanque, scarce.

C. acerosum, *Schrank.* A pure gathering (some in conjugation) in a small pool at Clanque. Frequent in the pool in Mauney quarry. Marsh at Val du Sud, a very large form. A small form at Trois Vaux. Also found in several other places. This species and *Cosmarium Botrytis* are by far the commonest Desmids in Alderney.

***C. Leibleinii,** *Kütz.* Old quarry pool at Clanque Bay, scarce.

C. Dianæ, *Ehr.* Abundant in the pool in Mauney quarry.

THE COCCIDÆ OF GUERNSEY.

BY MR. W. A. LUFF, F.E.S.

THE *Coccidæ* are popularly known as Scale insects and Mealy-bugs. They belong to the *Homoptera*, a sub-order of the *Hemiptera*. The females are invariably destitute of wings and the mouth is formed for sucking the juices of plants. The male is in some cases wingless but usually has one pair of wings. The most curious fact about this sex, however, is that they have no mouths, the place where that organ usually is being occupied with one or two pairs of eyes.

Among the best known of the *Coccids* are the common Mussel Scales, *Mytilaspis pomorum*, which infest apple and pear trees. These scales are all females, and the male has proved so extremely rare that until its discovery in England by Mr. Newstead in 1896 it had remained unknown for 150 years. The female has a shield-like covering, under which she lays her eggs; she then dies and shrivels up, the shell remaining attached to the plant until the eggs are hatched. Many species of this family are remarkable for the number of generations succeeding each other for years without the intervention of a male.

The Mealy-bugs are dreaded as a pest by horticulturists, many of them being very common in hot-houses, &c. They belong to the genus *Dactylopius* and cover themselves with a white mealy substance, hence their name.

Closely allied to this genus is that of *Ripersia*, most of the members of which are of subterranean habits, living on the roots of grasses and plants in ants' nests. The genus *Orthezia* are easily distinguished from other *Coccids* by the body being covered with thin plates of pure white wax, which overlap and form beautiful and symmetrical designs.

Although most of the Scale insects are injurious, three species furnish us with commercial products of great importance.

The lac insect (*Tachardia lacca*) furnishes us with the "lac" which is used for varnish, French polish and many other purposes. It is imported into England upon twigs and small branches of trees and is commercially known as "stick lac," it is then made into "shellac," a material known to almost everyone.

Coccus Cacti, the Cochineal insect, was once almost exclusively used for dyeing purposes, but since the discovery of aniline dyes, it has to some extent gone out of use. It is still used, however, for dyeing valuable silks and is the best crimson dye for colouring sweetmeats and confectionery, being quite harmless. In China a *Coccid*, named *Ericerus pe-la*, secretes a pure white wax which is collected and made into candles.

Two species of *Coccidæ*, *Exæretopus formiceticola* and *Dactylopius Luffii*, found by myself in Guernsey, are new to science and up to the present they are still peculiar to the island. Two species, *Ripersia Tomlinii* and *R. Europæa*, were first discovered in Guernsey, the first-named by Miss Tomlin and the second by myself. As these four species are so intimately connected with the island I herewith give a detailed account of them and their discovery.

Exæretopus formiceticola, Newstead.—I found numbers of the females of this species during June, 1893, under stones, also attached to the roots of *Dactylus glomerata* in ants' nests near Bordeaux Harbour. The stones were just on the edge of a beach, part of which had been rolled up beyond the action of the tides. On August 22nd, 1901, I found a new locality for the species, on the cliffs at Pleinmont.

The most remarkable thing about this new *Coccid* is that it has a two-jointed anterior tarsus, a character never before noted in any *Coccid*. A new genus, therefore, had to be established to receive it. Mr. Newstead says that, "so far, this is the only *Coccid* described as having a two-jointed tarsus (and this only on the anterior legs), and it is for this reason alone that I establish a new genus for it; otherwise, I should have placed it in *Lichtensia*, with which genus, although it is not strictly conformable in its normal characters, it agrees more nearly than any other." Mr. Maskell says "it requires, in my opinion, some very important feature to make a generic character when only one species is known." Surely nothing could be more important than the anomalous character of the fore-legs.

The rest of the characters of the female and all those of the larva are strictly *Lecanid*. On comparing the larva

with that of *Lecanium tiliæ*, Lin., for instance, the only appreciable difference will be found in the arrangement of the hairs on the anal ring, a character which would hardly separate them generically."

A full description of the adult female and larva is published by Mr. Newstead in the *Entomologists' Monthly Magazine* for September, 1894. Figures are also given of the two-jointed anterior tarsi and the eight-jointed antennæ.

Dactylopius Luffii, Newstead.—A species new to Science discovered by myself on September 14th, 1899, on the coast near Richmond during one of the Society's numerous excursions to that locality. They occurred in thick clusters on the lower stems and at the roots of *Lepigonum rupestre*, and were very lively. Mr. Newstead, to whom I sent specimens, said "the agility of these little 'mealy-bugs' was remarkable and certainly not equalled by any other *Coccid* I have observed." This species has hitherto only been found in Guernsey. A full description of this species is given by Mr. Newstead in the *Entomologists' Monthly Magazine* for April, 1901.

Ripersia Tomlinii, Newstead.—This is a most interesting insect; it was first discovered by Miss Tomlin, of Chester, whilst searching for *Coleoptera* at Moulin Huet, in September, 1891, and forwarded to Mr. Newstead, who named it after the discoverer. A description of the larva and adult female is published by Mr. Newstead in the *Entomologists' Monthly Magazine* for June, 1892. The male is unknown.

In the following year (April, 1893) Mr. Newstead published the following interesting notes on the species :—

"When the description of this species was published, I was unable to furnish the names of the ants in whose nest the *Coccids* were found. On subsequently reading Mr. Smith's interesting remarks on the "Origin of Ants' Nests" (*Ento. Mo. Mag.*, Vol. III., pp. 60-307) I was all the more anxious to ascertain the name of the ants, and to get a further supply of *Coccids* and information. The only course open to me was to write to the Secretary of the Guernsey Society of Natural Science to put me in communication with a member who would be willing to take the matter in hand. This I did, and Mr. W. A. Luff kindly offered his services, and on August 1st, 1892, forwarded two specimens of the *Ripersia*, together with specimens of the ants as they were found. Mr. Luff remarked 'that they were found under a stone on the cliffs near Moulin Huet Bay. I searched carefully in nests of other species of ants, and

also under stones where there were no ants, but did not see another specimen. This was the only nest of this species of ant that I found.' The ants were kindly determined by Mr. E. Saunders as *Tetramorium cæspitum;* this, at the time, seemed a very remarkable coincidence, as Mr. Smith's (New Zealand) *Coccids* belonged to the genus *Ripersia*, and were found in the nests of two species of *Tetramorium*. On August 12th Mr. Luff kindly forwarded another lot of *Coccids* and ants which he had taken in Alderney; this is a new locality for the *Coccids*, which are undoubtedly *R. Tomlinii*, and the ants were *Lasius alienus*. From the liberal supply of *Coccids* I have been able to add some important particulars. With the specimens Mr. Luff enclosed the following:—'I particularly noted that the *Coccids* were found only under stones covering ants' nests, and in many instances were some distance down the holes leading to the interior of the nest. When I loosened a *Coccid* from the grass root to which it was attached, the ants carried it off into the interior of the nest; and in two instances I saw several ants loosen a *Coccid* themselves and carry it away. Even portions of the sac which I had broken off were eagerly seized on and carried off.' I think Mr. Luff's remarks are of the greatest value and interest to those who are interested in the subject. But whether the *Coccids* are originators of ants' nests I am not prepared to determine. My experience tends to prove that ants do seek *Coccids*, and this, no doubt, for the purpose of obtaining from them such material as is tasteful to them." The only other known habitat for this species, besides Guernsey, Alderney, Herm and Jethou, is Portland, where they were taken in the nests of *Lasius niger* by Mr. H. K. St. John Donisthorpe in April, 1901.

Ripersia Europæa, Newstead.—This species was first discovered by myself in 1895 at the roots of grasses and other plants under stones in ants' nests near Fort Doyle and on L'Ancresse Common. When disturbed, the ants seized on the *Coccids*, as in the case of *R. Tomlinii*, and carried them off. Mr. Brockton Tomlin found the species, during August, 1896, plentiful under stones in ants' nests for about a mile on both sides of St. Sampson's Harbour. The only other place where it has been found is near Rheim, in Germany, where Mr. E. Wasmann discovered it in 1896. A description of the species is given by Mr. Newstead in the *Entomologists' Monthly Magazine* for July, 1897.

I have found fourteen species of *Coccidæ* in Guernsey, but these are, no doubt, only a few of those which actually occur.

I will be very thankful for any specimens that members of this Society or others may discover on the plants in their gardens and greenhouses, and will do my best to get them named and to point out the best way to get rid of them.

During the present year Mr. Newstead's splendid *Monograph of the British Coccidæ* has been completed and published by the Ray Society. The description of each species is so clearly given and the full detail is so beautifuly and accurately illustrated on the 75 plates that accompany the work, that the result must be a greatly increased interest in the study of this hitherto neglected group of insects.

I am greatly indebted to Mr. R. Newstead, A.L.S., F.E.S., &c., for his kindness in naming all the specimens that I have submitted to him.

COCCIDÆ.

Chionaspis salicis, *Linn.* Taken on Ash Trees by Mr. H. C. Le Lacheur near Les Norgiots, July 7th, 1903.

Mytilapsis pomorum, *Bouche.* Common on Apple Trees where it is a great pest. On May 7th, 1903, I found a number of specimens on the common broom (*Sarothamnus scoparius*) growing on the cliffs near the Gouffre. These were specially interesting from the fact that, in addition to the adult female scales, there were many male scales. Hitherto, the latter had not been observed in England, see Mr. Newstead's interesting note in *Ento. Mo. Mag.*, June, 1893.

Eriopeltis festucæ, *Fonscolombe.* I found a number of adult females and their eggs on grass stems on the cliffs overlooking Moulin Huet Bay, July, 1892. It is an extremely local insect in England.

Exæretopus formicetícola, *Newstead.* Took numbers of specimens of the female under stones in ants' nests near Bordeaux Harbour, June, 1893. On August 22nd, 1901, found a new locality on the cliffs near Pleinmont.

Pulvinaria floccifera, *Westwood.* Numbers found on a Camellia bush, Queen's Road, 1894.

Lecanium hesperidum, *Linn.* Common on cultivated plants under glass, also on Orange and Lemon trees.

L. persicæ, *Geoff.* Common in greenhouses on various plants.

L. capreæ, *Linn.* I found hundreds of specimens on broom (*S. scoparius*) growing on the cliffs at the Gouffre. These were described in the *Ento. Mo. Mag.* for June, 1893, as *L. distinguendum*, Dorey.

L. hemisphæricum, *Targ-Tozz.* Found numbers on *Stephanotis* and other plants in a hot-house, April, 1894.

L. hemisphæricum, var. *filicum.* May, 1903, on Asparagus in a greenhouse.

Dactylopius citri, *Risso.* The commonest of the Mealy-bugs. I have found it on various plants, including the vine in Guernsey, also a living specimen on an imported orange. It is a great pest in the Orange-growing districts of Southern Europe.

Dactylopius Luffii, *Newstead.* Common on the lower stems and roots of *Lepigonum rupestre* on September 14th, 1899, near Richmond. This is its only known habitat.

Ripersia Tomlinii, *Newstead.* In ants' nests under stones, Moulin Huet Cliffs, Guernsey. Very common on the Alderney cliffs, also in Herm and Jethou.

R. Europæa, *Newstead.* Common under stones in ants' nests, around the north coast of the island. First discovered in Guernsey in 1895. The only other locality is near Rheim in Germany.

Newsteadia floccosa, *De Geer.* One specimen found in an ants' nest with specimens of *R. Tomlinii* on the cliffs at Moulin Huet.

THE VALE CHURCH AND PRIORY.

On the occasion of the visit of this Society to the Vale Church and Priory on July 15th, 1903, the Rev. G. E. Lee, M.A., F.S.A., gave an extremely interesting description of this ancient Church. Mr. Lee has, for a great many years, made a special study of our parish churches, and no one is better qualified than he to supply authentic historical *data* to replace the traditional myths which are commonly associated with these sacred edifices. Mr. Lee's knowledge of church architecture also enables him to point out exactly those features which are of special interest to ecclesiologists; and, therefore, it is much to be hoped that the other churches of this island will be described in the same way as those of St. Peter-in-the-Wood and the Vale. The following are the principal points in Mr. Lee's remarks on the present occasion.

At an early date, probably many years before the conquest of England by the Normans, the Abbey of Mont St. Michel established a small priory in the neighbourhood of this church. Some time between 1028 and 1034, Duke Robert of Normandy, the father of the Conqueror, gave half of the island of Guernsey to the great Abbey. This gift included the parishes of the Vale, the Castel, St. Saviour's and St. Peter-in-the-Wood. In 1155 a Bull of Pope Adrian IV. mentions the Vale Priory among the possessions of the Abbey, and also names the little dependent cell of St. Mary of Lihou. In the following year Robert de Torigni, one of the most famous of the Abbots of the Mount, visited Guernsey. It is said of him: *Ses entreprises le firent chérir des roys, révérer des reynes, et généralement aymer de tous.* He built the western towers of the great Abbey, and to his time, 1154-1186, Mr. Lee is inclined to ascribe the building of the earlier part of the existing Church of the Vale. The Church is again mentioned in a Papal Bull of Alexander IV., 1178. In 1218, King Henry III. ordered Philip d'Aubigné, Bailiff or Warden of the Isles, to restore to the monks of St. Michel all their rights and privileges in the Vale. The King at the same time renounces the claim, hitherto made by himself and his ancesters, to three yearly

dinners at the Prior's expense. In future these dinners are to be restricted to the Bailiff and his clerk, with one other attendant. In 1238, Henry de Trubleville, Lord of the Islands, reinstates the Abbey in possession of the Priory and its belongings. In future, except in time of war, the monks of the Vale may export their corn whither they please. In 1249, Brother Henry, a Canon of Blanchelande, was by special grace collated to the Rectory of the Vale Church, which no secular priest cared to accept. Apparently the monks of St. Michael did not at this time undertake the service of the parish church. In 1286, Gilbert de Poliers gave all his possessions to the Abbey of Mont St. Michel, and his personal service to the Prior of the Vale, on condition of his having board and lodging in the Priory and £4 *tournois* for his clothing. In 1307, Jean de la Porte was Prior, and in 1314 he became Abbot of the famous Abbey. He was a great builder—*valde profuit in ædificando*—and Guernsey may have had help from him in Church architecture, but he does not seem to have added to the Vale Church. In 1312, Guillaume Le Feivre was Prior, and was succeeded by Reginald Pastey, who had a lawsuit with the parishioners of the Vale, the Castel, St. Saviour's, St. Peter-in-the-Wood and Torteval, concerning certain tithes. Judgment was given against the prior. While the suit was in progress, one Alan Le Prévost laid a charge against the Prior, whose servants had broken into Alan's house, beaten and severely wounded him. In a petition of this date, about 1325, we find reference made to a procession round the Moustier de St. Michel du Valle, *ausy que ex et leurs ancestres ont fay avant ces houres*. In 1368, the Treasurer of the Vale Church alleged that the Prior was bound to pay one-third of the cost of repairs, lights, books and vestments in the Parish Church. Prior De Carteret redeemed this liability by assigning a rente of 3 quarters of wheat to the Treasurer. At this time the Prior was in the habit of meeting the parishioners every year to hear the Treasurer's accounts read.

From the Extente of Edward III. we learn that the Abbot of Mont St. Michel owned 60½ bouvées of land in the Clos du Valle and 11½ on the fief of Noirmont, outside the Clos, besides 12 bouvées on the Caruée de Rosel. At that time 4 vergées made an acre, and 5 acres a bouvée, so that the Abbey owned in all 1,680 vergées of land in Guernsey. In 1318, the revenue of the Priory was 706 livres, probably livres *tournois*. We may calculate the value

of this sum from the fact that 360 quarters of wheat are set down in the accounts as being worth 144 livres, *i.e.*, 8 sols per quarter. Upon this basis we find that 706 livres was the equivalent of 1,765 quarters of wheat, which at the present time (1903) would be valued at £1,103 2s. 6d. sterling. In the accounts of the Priory (1307-1320) Mr. Lee noted the following payments: Paid for the Archdeacon's visitation, £2 (*tournois*); to Robert le Gay for a robe for the Abbot, £5; to William de la Hogue, going to the Mount, £2; to Oliver the Monk, going to England, £5; for two Mill-stones, £32 10s.; the Sub-Prior and R. de St. Martin going to the Mount, £5; Colin Le Sueur for a boat, 14s.; the same for repairing the Manoir, £8; the Lord Abbot's expenses, £38; for boats to carry the Lord Abbot, £16 (this Lord Abbot was apparently John de la Porte, whose election to the Abbacy must have caused a great sensation in Guernsey); to the Bailiff, £100; a boat to carry corn to Genet (a little port near Mont St. Michel), £7; for repairs to the Castel and Vale Churches, £7; one quarter of wheat for the *aumône* of the Lord Abbot, £6; the Aumônier, £25; the Sub-Prior, £5; Chaplain of St. Mary, £2 (Mr. Lee thinks this was the Chaplain of Notre-Dame de Pulias or de l'Epine); the Cantor, £12; the great Prior, £20; expenses of the King's household, £20 (this probably refers to the yearly dinners and other dues to the King's officers); Daniel, for a gown, £3.

In 1347 the Lieutenant-Governor, Ralph de Hermesthorpe, writes that he hears that the Prior of Lihou receives only 15 livres per annum as a stipend, *lequel mest avis que est trop petit au temps qui est et a estey.* If corn was still sold at the same price as it had been a few years earlier, this sum would have bought 37½ quarters of corn, which would be worth £23 8s. 9d. of our money.

As to the architecture of the Church, Mr. Lee considers the nave, chancel and the lower part of the tower to belong to the second half of the 12th century. The masonry outside the Church shews none of the wide joints of early Norman times, nor is there any herring-bone work, *appareil en arête de poisson.* The *clochetons* at the base of the spire are so atrociously mutilated that it is difficult to judge whether they are part of the original tower. Of these *clochetons* M. de Caumont says: "On peut affirmer qu'ils ont été fort rares avant la deuxième moitié du 12e siècle." The windows of the tower are simple late Norman. The chancel of the Church, with its rude pillars and curious stone seats, is very

interesting. The roof of the chancel seems to have been rebuilt when the arcade and north aisle were added; this would account for the strange *clef de voûte*. The zig-zag mouldings which predominate in the chancel are not found in early Norman times. The Vale Church was much less ornate than that of Lihou, where "beak-heads" occur in the mouldings. Under the tower-arch, which is pointed, a small patch of fresco was to be seen on the plaster when the Church was restored a few years since, but the plaster was too ruinous to be preserved. The north aisle of the Church is probably of the 15th century and was built in two parts, the east end first. The east window of this aisle is later than the wall in which it is found, as is shown by the way in which it encroaches on the buttress outside. The tracery is of late flamboyant style. Close by this window is a good granite piscina of the same period. Another piscina, in Caen stone, is to be seen near the high altar, and a third outside the chancel. According to Mr. Parker, no piscinas are known in England before the middle of the 12th century, and M. de Caumont says that they were extremely rare in France before the 13th. On the western sides of the pillars of the nave arcade are corbels to hold statues; these have been unfortunately mutilated. The windows of the same aisle have heavy hoods over them, which indicate the style of the 15th century. The porch of that period is of very rough workmanship. To the same date Mr. Lee ascribes the handsome doorways of the west end, with their receding arches of red and blue granite, recalling a similar arch in the manor-house of Anneville. One or two really interesting floor monuments still remain, but in the recent restoration were most unfortunately placed between the vestry door and the chancel. The result is that they are fast being destroyed. On one of these we used to read the legend *Orate pro anima Galfridi.* This may have been the tombstone of Prior Geoffrey De Carteret, *circa* 1370; but there was another monk of the same name in 1314, and a Geoffrey le Vallet at the same date. Another stone shows the matrix of a brass with heater shield, probably of the 14th century. On leaving the church Mr. Lee pointed out the few interesting remains of the priory buildings. These include the 15th century buttresses in the gable on the roadside and a pointed window in the wall which separates the churchyard from the garden below. Unfortunately too little remains to enable us to reconstruct the plan of this priory, as we are still able to do at Lihou.

THE RAINFALL OF GUERNSEY FOR THE YEAR 1903.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

NINE stations have co-operated during 1903, instead of six in 1902. One station, St. George, ceased observing in March owing to Mr. Robertson leaving the island. Observations from this station, embracing only two months' results, are not included in this discussion. A second station, Claire Mare, ceased sending results at the end of November. This station's results, as they extend over eleven months, are included, the twelfth month being in some of the tables given a proportionate amount of rain so as to make the comparison possible. Four stations have commenced work and are helping to accumulate the necessary data to perfect our knowledge of the rainfall. These are Nos. 4, 5, 6 and 9 on the first table.

Leaving Claire Mare, Mr. J. J. Carey completes for that station eight years' record. He does not cease observing, but having taken up his residence at Cobo, he is to take on the Cobo gauge from Miss Pringle. Miss Pringle will cease to record because of this transfer. We therefore have the results of the west coast dependent on the one station instead of two as before; fortunately we have an overlap and will thus be able to form an opinion of future quantities for the extreme S.W. of the island.

TABLE I.

Ref. No.	Position in Island.	Address.	Observer.	Elevation.
				Feet.
1	S.E.	"Brooklyn," Fort Road.....	Mr. A. Collenette	300
2	S.E.	"Les Blanches," St. Martin's.	Mr. B. Rowswell..	300
3	E.	"Villa Carey," Grange	Dr. F. Carey	180
4	E.	"Colborne Villa," Rohais.....	Mr. J. Guilbert...	145
5	E.	"Caledonia Nursery," Couture	Mr. J. De Putron	100
6	N.E.	"Richmond," St. Sampson's...	Mr. A. Poat	25
7	N.E.	"Les Mielles," l'Ancresse	Mr. J. Hocart.....	33
8	S.W.	"Claire Mare," Perelle	Mr. J. J. Carey ...	50
9	W.	"Holme Isla," Cobo.....	Miss Pringle	70

It may be of interest to the Society to see in the tables that the difference found to exist between the rainfall of Hauteville and Les Blanches is still shown for 1903, there being a surplus for Brooklyn over Les Blanches of 2·68 inches.

This difference will be alluded to later on.

The average rainfall, of what I shall now speak of as the Hoskins-Collenette series, is now 36·62 inches. This is the mean figure of 61 years' observations. Last year the average was shown to be 36·52 for 60 years. The difference is due to the greater rainfall of 1903.

The observations at Brooklyn have yielded 40·88 inches. This is the largest rainfall since 1886. 1886 exceeds this year by 3·88 inches. 1894 exceeded 40 inches, but yielded just half an inch less than 1903. The year has, therefore, proved a wet one. February, May, November and December were dry months. August and October were very wet, these two months giving together 11·90 inches against the average quantity of 7·33 inches; they are therefore practically responsible for the excess of the year. The detail of Table II. shows that the quarterly totals are in excess during the first three quarters, but owing to the dryness of November and December the fourth quarter shows a deficit.

TABLE II.

GUERNSEY RAINFALL FOR THE YEAR 1903.

Results of Daily Observations at Nine Stations compared with the Averages.

MONTHS.	SOUTH-EAST.		EAST.			NORTH-EAST.	S.-WEST	WEST.		Means of all Stations.	The 61 years' Averages
	Brooklyn, Fort Road.	Les Blanches, St. Martin's.	Villa Carey, Grange.	Rohais.	Caledonia Nursery, Couture.	Richmond. St. Sampson.	Les Mielles, l'Ancresse	Claire Mare, Perelle.	Cobo.		
January	3·81	3·70	3·37	3·47*	3·53	3·70*	3·76	3·26	3·32	3·54	3·81
February	1·66	1·69	1·34	1·54	1·65	1·53	1·57	1·40	1·48	1·54	2·60
March	3·66	3·37	3·12	3·74	3·69	3·69	3·15	3·20	3·31	3·43	2·48
April	2·79	2·39	2·35	2·66	2·68	2·52	2·34	1·94	2·17	2·42	2·36
May	1·59	1·57	1·52	1·58	1·56	1·68	1·82	1·36	1·51	1·57	2·14
June	3·12	2·83	2·63	2·90	2·64	2·86	2·68	3·06	2·82	2·83	2·01
July	2·22	2·06	2·09	1·97	2·12	1·92	1·78	1·76	1·80	1·97	2·20
August	5·43	4·95	4·93	5·34	5·13	5·14	4·64	3·81	4·04	4·82	2·47
September	3·95	3·74	3·88	3·78	3·92	4·24	4·05	3·32	3·48	3·81	3·12
October	6·47	6·12	6·01	6·38	6·24	6·42	5·88	4·89	5·59	6·00	4·86
November	2·74	2·58	2·24	2·54	2·20	2·85	2·58	1·86	2·02	2·40	4·42
December	3·44	3·20	3·21	3·74	3·51	3·25	2·76	2·65*	3·03	3·19	4·14
Jan.-March	9·13	8·76	7·83	8·75	8·87	8·92	8·48	7·86	8·11	8·51	8·89
April-June	7·50	6·79	6·50	7·14	6·88	7·06	6·84	6·36	6·50	6·83	6·51
July-Sept.	11·60	10·75	10·90	11·09	11·17	11·30	10·47	8·89	9·32	10·62	7·79
Oct.-Dec.	12·65	11·90	11·46	12·66	11·95	12·52	11·22	9·40	10·64	11·60	13·42
Year's Totals	40·88	38·20	36·69	39·64	38·87	39·80	37·01	32·51	34·57	37·56	36·62

*See Note at the foot of Table IV.

The nine stations have given fairly consistent results, the peculiarities of former years having been maintained. The feature which stands out as noticeable is the small rainfall of Claire Mare. This station has been reporting for eight years, and its results have been persistently and consistently lower than any other station. It is my intention in this paper to confine the discussion to the distribution of rain over the island, its peculiarities having been brought to light largely by the extraordinary difference between the Town rainfall and that of Perelle. There is now no doubt that much heavier rainfall is measured on the elevated portions of the island. There is also no doubt that the rainfall increases in amount from west to east. These facts have been proved by the new gauges and enable us to form an opinion on the distribution which may be wrong as to details, but will no doubt prove to be correct in its main features. There is a difference in the eight years' average between the Town and Perelle of, roughly, 6 inches, the figures being 34·65 and 28·31 inches. Such stations as Cobo and l'Ancresse give intermediate quantities. The results from the two new Town stations, Couture and Rohais, for this their first year go to prove that they are outside the area of greatest rainfall, as is also St. Sampson's, but these stations must report for a longer time before we are able to place them correctly in the scheme.

As far as the evidence goes at present the area of greatest rainfall is limited to the Town proper and the high land to the south and west of the Town.

It is now becoming possible to provide corrections of the rainfall of different parts of the island which, when applied to the readings, will show consistency where apparently there is contradiction.

The first correction is one for differences of elevation.

For the moment I have adopted one inch in 100 feet as representing the probable correction, and in Table III. I have corrected the readings by this proportionate amount, but instead of using the elevations of the stations, I have used the elevations of the high ground in their neighbourhood, because it is the true cause of the difference. In this investigation I correct with Brooklyn as a standard because there is, so far, no possibility of fixing a mean height for the island.

The second correction is an estimated one. Having found that the rainfall diminishes from W. to E. by over three inches after being corrected for elevation, this amount is added (or a proportionate amount) to the western stations.

The third correction is also estimated. An enquiry into the peculiarities of the stations leads to the belief that the rainfall of certain stations is reduced by the nearness of obstacles.

TABLE III.

Giving the Corrections for Elevation, Shelter and Position of Eight of the Reporting Stations.

Totals for 1903.

Corrections.	Les Blanches 300 feet.	Grange. 180 feet corrected for 200 feet.	Rohais. 145 feet corrected for 200 feet.	Couture. 100 feet corrected for 150 feet.	Cobo. 75 feet.	Claire Mare. 50 feet.	l'Ancresse 33 feet.	St. Sampson 25 feet.
1903 Totals.	38·20	36·69	39·64	38·87	34·57	32·51	37·01	39·80
1. Correction for elevation.....	—	+ 1·00	+ 1·00	+ 1·50	+ 2·25	+ 2·50	+ 2·67	+ 2·00
	38·20	37·69	40·64	40·37	36·82	35·01	39·68	41·30
2. Correction for Position	—	+ ·15	+ ·20	+ ·13	+ 2·08	+ 3·00	—	—
	38·20	37·84	40·84	40·50	38·90	38·01	39·68	41·30
3. Correction for shelter	+ 2·68	+ 3·19	—	+ 0·38	—	—	+ 1·00	—
	40·88	40·03	40·84	40·88	38·90	38·01	40·68	41·30
Differences of corrected Totals as compared with Brooklyn	—	—0·85	—0·04	—	—1·98	—2·87	—0·20	+ 0·92

For instance, Les Blanches is at the same elevation as Brooklyn and is also on the east side of the island, yet its rainfall (using 1903 totals) is 2·68 below. It is surrounded by trees. The total collected at the Grange is 3·19 below. This station may be affected by trees and also by the indraught of the Vauvert valley. So corrected the stations appear to be working well together, with the exception of the west coast stations, and the results show that the increase

from W. to E. is a real one and dependent on the rise of land in that direction.

TABLE IV.

COMPARISON OF STATIONS WITH THE 61 YEARS' AVERAGES. MONTHLY TOTALS.

Months.	The 61 Years' Average.	Brooklyn, &c.		Les Blanches.		L'Ancresse		Claire Mare.		Grange.		Rohais.	Couture.	St. Sampson's.	Cobo.	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
January	3·81	2·90	76	2·69	70	2·60	68	2·30	60	2·60	68	91	92	96	2·27	59
February	2·60	2·81	108	2·41	92	2·82	108	2·71	104	1·40	54	61	63	58	0·99	38
March	2·48	2·74	110	2·61	105	2·52	101	2·38	96	2·45	98	151	149	149	5·82	203
April	2·36	2·88	122	2·82	119	2·67	116	2·32	98	2·93	120	113	109	107	1·50	63
May	2·14	1·94	90	2·01	93	1·97	92	1·62	75	1·63	75	74	73	78	0·84	39
June	2·01	2·18	108	2·04	101	1·85	92	1·81	90	2·37	118	144	133	144	2·25	114
July	2·20	1·31	59	1·27	58	1·18	53	1·07	48	1·92	87	89	96	87	1·48	67
August	2·47	3·06	124	2·90	117	2·72	110	2·46	99	4·34	175	216	206	206	3·13	127
September	3·12	3·27	104	3·05	97	1·40	45	2·67	88	3·09	99	121	125	135	4·73	151
October	4·86	3·94	81	3·79	78	2·70	55	2·73	56	4·55	93	131	127	134	6·05	124
November	4·42	3·52	80	3·26	73	3·16	71	3·06	69	2·73	61	57	50	64	3·46	73
December	4·15	4·10	99	4·37	105	4·09	98	3·75	90	3·34	80	90	84	78	3·86	93
The Year	36·62	34·65	94	33·28	91	29·84	81	28·31	77	33·35	90	108	106	108	32·44	88

NOTE.—Columns 1, 3, 5 and 7 are averages of eight years. Columns 2, 4, 6 and 8 give the ratios of eight years' averages to the 61 years' averages. Columns 9, 10, 14 and 15 give the averages and ratios of two years only. Columns 11, 12 and 13 give the ratios of 1903 only. The Stations Rohais and St. Sampson's did not commence in January, and Claire Mare ceased at the end of November. Proportionate amounts have been added to enable the annual ratio to be compared.

In Table IV. the averages of the last eight years for some stations and 1903 for the new stations are compared, and the ratios between these averages and the 61 years' average given. This table does not need comment as it is self explanatory.

TABLE V.

WET DAYS. COMPARATIVE STATEMENT. 1903 AVERAGES AND THE 61 YEARS' AVERAGES.

Months.	The 61 Years' Averages.	1 Brooklyn.	2	3 Les Blanches	4	5 L'Ancresse.	6	7 Claire Mare.	8	9 Grange.	10	11 Rohais.	12 Couture.	13 St. Sampson's.	14 Cobo.	15
January	19	25	20	25	19	26	18	22	19	24	19	*20*	22	*24*	25	20
February	15	14	16	13	16	12	14	12	11	12	11	*11*	11	11	12	11
March	16	21	19	18	20	20	16	16	17	17	18	18	20	19	18	19
April	13	15	16	16	16	13	14	11	14	13	12	12	12	14	13	12
May	11	14	11	12	11	12	11	12	8	12	12	10	11	11	13	8
June	10	10	10	9	11	11	8	10	10	11	14	10	9	10	9	10
July	11	13	8	12	7	11	6	10	6	12	10	11	12	11	10	8
August	12	21	13	19	13	17	11	14	13	19	18	19	22	21	17	14
September	14	18	15	16	15	16	11	16	13	16	16	14	16	20	15	19
October	19	31	20	30	20	30	15	28	17	30	26	30	31	30	29	28
November	19	21	15	21	17	19	14	16	15	21	19	22	18	20	17	15
December	19	20	22	21	23	19	19	*18*	19	21	21	23	22	21	18	23
The Year	178	223	189	212	195	206	177	*183*	165	208	196	*200*	206	*212*	196	190

Columns 1, 3, 5, 7, 9, 11, 12, 13 and 14 are the wet days of 1903. Columns 2, 4 and 8 are the average wet days during the last eight years. Column 6 gives the average for seven years. Columns 10 and 15 give the average for two years. The Stations Rohais and St. Sampson's did not commence observing before February, and Claire Mare ceased at the end of November; the columns 7, 11 and 13 have therefore been proportionately increased so as to make the comparison complete. The figures thus added to are printed in italics.

In wet days the year shows a large excess, having given 223 days against an average of 178. Claire Mare returns the smallest number, 183, and Cobo follows with 196, all the other stations returning 200 or over. The wet days this year have been more in number than the excess of rainfall would give in the averages. This is, of course, the result of the smaller quantities of rain per wet day.

GUERNSEY SUNSHINE FOR 1903.

BY MR. A. COLLENETTE, F.C.S., F.R. MET. SOC.

WE have practically had the same sunshine as last year, the figures for both years being 1,768 and 1,767 hours. In 1894 and in that year only, during the ten years covered by the observations, have we had a smaller total. In that year only 1,724 hours occurred.

A study of the first table will show that the rise and decline of Annual Sunshine has been steady and regular. 1894 was the lowest year, from which the totals rose steadily until 1899, when 490 hours' more sunshine was recorded than 1894, the intermediate years rising (with the exception of 1895) gradually. 1899 once past a regular fall set in year by year, and 1903 is the lowest year of the declining ones.

TABLE I.

Years.	TEN YEARS' TOTALS. Annual Totals. *Hours.	*No of hours below the Sunniest Year.	Above or below the Average of Ten Years.	Percentage of Possible Sunshine.	Sunless Days.	MEANS AND COMPARISONS. Sunniest Month. No. of Hours.*	Month.	Sunniest Day in each year. No. of Hours.	Day of the Month.	Month.	The Smoothed Curve. The years included.	Mean No. of Hours.	Percentage of the possible.
1894	1,724	490	— 203	38	49	230	May	14·43	13th	June	—	—	—
1895	2,069	145	+ 142	46	50	310	May	14·75	3rd	July	—	—	—
1896	1,825	389	— 102	41	61	307	May	15·02	11th	June	1894-6	1872	42
1897	1,874	340	— 53	42	53	305	July	15·00	11th	June	1895-7	2022	45
1898	2,090	124	+ 163	47	40	338	July	15·00	7th	July	1896-8	2043	46
1899	2,214	—	+ 287	49	43	340	July	14·50	11th	June	1897-9	2056	47
1900	2,026	188	+ 101	45	51	326	July	14·66	22nd	June	1898-0	2091	47
1901	1,897	317	— 30	42	50	276	May	14·50	5th	June	1899-1	2046	46
1902	1,768	446	— 155	39	53	285	July	14·70	3rd	June	1900-2	1897	42
1903	1,767	447	— 160	39	53	248	July	13·88	5th	Aug.	1901-3	1810	40
Means..	1,927	287	—	42	50	338	July						

* Decimals have been omitted. The nearest whole number is used.

These ten years have been smoothed into three years' means, the smoothed curve thus produced (see last three columns of the table) show the gradual rise and fall very effectively. In this smoothed curve 1901-3 come out at the bottom.

Being a believer in the efficacy of sunshine in lessening disease and increasing agricultural and commercial prosperity, I am hoping that the bottom of this extraordinary curve has been reached and that we will now experience another rise.

TABLE II.

GUERNSEY SUNSHINE, 1903. BROOKLYN, FORT ROAD.

Months.	1903.	Average of Ten Years.	Above the Average.	Below the Average.	Sunless Days. 1903.	Sunless Days. Average.	Percentage of the Possible.	The Possible Monthly Totals.	Daily Mean Sunshine for 1903.	Daily Mean Sunshine. Average of 10 years.
	Hours.	Hours.	Hours.	Hours.			1903.	Hours.	Hours.	Hours.
January	38·71	51·18	—	12·47	12	10	14	264	1·2	1·6
February	76·28	83·33	—	7·05	7	7	27	278	2·7	2·9
March	166·86	142·08	24·78	—	3	3	32	365	5·3	4·5
April	193·38	194·10	—	0·72	4	2	47	410	6·4	6·4
May	247·16	258·17	—	11·01	0	1	41	471	7·9	8·3
June	207·19	258·32	—	51·13	3	0	43	482	6·9	8·6
July	248·23	283·36	—	35·13	1	0	51	483	8·0	9·1
August	227·43	248·04	—	20·61	2	1	51	441	7·3	8·0
September	182·59	188·65	—	6·06	1	1	49	373	6·1	6·3
October	88·45	111·16	—	22·71	3	3	26	331	2·8	3·5
November	59·77	67·03	—	7·26	6	8	21	271	2·0	2·2
December	30·89	42·10	—	11·21	11	11	12	255	1·0	1·3
Totals	1766·94	1927·52	—	160·58	53	50	39	4,424	4·8	5·2

In the second table given it will at once be noticed that only one month exceeded the average for the ten years, that was March ; all the remainder were below their averages. and in the cases of June and July very much below.

The sunless days were but three above the average, so that it appears that the want of sunshine has been a persistent daily one. This fact is shown in many ways in the tables, as for instance : The sunniest day of this year produced but 13·88 hours while the previous lowest was 14·43 hours.

The absence of long sunny days threw the sunniest day into August, when in ordinary years it occurs in June, but in June and July this year the sunshine curve was depressed. These months were 51 and 35 hours short of the averages.

Another test of the peculiarities of the year is to be found in the fact that in no month did we get 300 hours, while in former years this figure, and above, occurred as follows, as will be seen in the third table given :—1895, May, 309; 1896, May, 307, June, 302; 1897, July, 305; 1898, July, 337 ; 1899, June, 314. July, 340, August, 325; 1900, July, 326.

TABLE III.

TEN YEARS' RECORD OF SUNSHINE IN GUERNSEY.

Months.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	Ten Y'rs Ave'ges.
January	64·85	63·28	39·91	42·44	66·71	49·72	45·88	67·56	28·74	38·71	51·18
February	87·02	111·26	98·92	63·79	85·95	118·90	65·43	44·60	81·13	76·28	83·38
March	196·77	168·08	110·10	146·59	93·24	209·90	121·96	83·67	123·66	166·86	142·08
April	191·77	191·21	171·41	163·29	224·33	156·26	233·88	220·04	195·46	193·38	194·10
May	230·01	309·74	307·02	239·85	204·35	245·55	277·93	276·65	244·21	247·16	258·17
June	215·31	294·50	301·86	269·29	273·48	314·37	222·42	272·63	211·15	207·19	258·32
July	187·20	254·61	277·73	305·62	337·73	339·93	326·33	270·68	285·55	248·23	283·36
August	186·43	244·84	234·20	239·19	265·15	325·57	269·54	270·22	217·81	227·43	248·04
September	155·16	269·41	107·28	142·23	267·07	185·71	241·83	155·86	179·37	182·59	188·65
October	91·86	91·35	85·18	120·74	128·79	152·57	142·02	120·37	90·25	88·45	111·16
November	74·53	62·10	68·96	66·30	94·62	73·86	39·90	71·50	67·77	59·77	67·03
December	44·20	17·95	38·12	75·15	48·99	41·94	38·83	43·21	42·89	30·89	42·10
The Year	1724·47	2068·93	1825·56	1874·48	2090·41	2214·28	2025·95	1896·99	1767·98	1766·94	1927·52

A study of the monthly totals in the third table will show that January, although better than last year, is lower than in any other previous year. February was not quite so bad, for 1897, 1900 and 1901 had gloomier Februarys. March was the best month this year in the sense of its exceeding the average of ten years, while no other month even reached its average, but even that month was exceeded by the Marchs' of 1894, 1895, 1899, 1900 and 1902. The remaining months are equally bad, but of these June and December have given smaller totals than any previous June and December; June is less than the previous lowest June by four hours and December by seven hours.

The effect of these recent gloomy years has been to reduce the averages, so that these stand considerably lower than they did.

The gloomiest day of the year was the 4th of January, with seven minutes mean sunshine. The 19th approached it nearly with 30 minutes, but the 29th of December was second gloomiest with twenty-six minutes.

The sunniest day of the year was the 7th of July, with 11·57 hours. This day during the ten years has not given less than 4¾ hours sunshine, whereas the 4th of January has given seven sunless days out of eleven.

GUERNSEY

SOCIETY OF NATURAL SCIENCE

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TRANSACTIONS OF THE SOCIETY.

The Soirée which was held in the Guille-Allès Lecture Hall on the evening of January 26, 1904, to celebrate the completion of the twenty-first year of the Society's existence, proved in every way a gratifying success. Four short Lectures were delivered, with Electric Lantern illustrations, and these were interspersed with musical selections most kindly given by Miss Isemonger. The attendance was large, about 140 persons being present.

The first Lecture was by the President, Dr. J. Aikman, on "The Study of Nature." In the study of Nature we stand face to face with a history written in cipher: the key to that cipher is patient classification, namely, the arrangement of living and dead things according to their structure and surroundings, and any other circumstance which may affect them. After dealing with the subject from several points of view, the lecturer concluded by briefly reviewing the Society's work since its organisation twenty-one years ago.

The second Lecture, by Mr. A. Collenette, was entitled "The Mighty Atom." Modern research shows that an atom, although so inconceivably minute that many trillions are contained in a cubic inch of matter, is not really indivisible, as was formerly supposed, but on the contrary, of gigantic size when compared with electrons, of which 100,000 could lie on the diameter of a single atom. The lecturer explained the properties of Radium atoms and the famous X rays, and dwelt on the probable relationship of the electric current with the movement of electrons.

The third Lecture, by Mr. E. D. Marquand, was entitled "Some of the Marvels of Insect Life." One of the most familiar of all insects, the common Housefly, was selected for examination, and various parts of its anatomy and structure described. The arrangement of the suckers on the foot, whereby a fly is enabled to walk up and down a window pane; the elaborate breathing apparatus; the compound eyes, consisting of thousands of lenses aggregated together, enabling the fly to see in all directions at the same

moment; and finally the proboscis, or tongue, one of the most beautiful and complex pieces of mechanism in all nature, were described in turn, and the diversity of these organs in other insects briefly pointed out.

The concluding Lecture, by Mr. R. C. Mabbs, was entitled "Some Missing Links." Confining his remarks to the great gap existing at the present day between the Reptiles and the Birds, the lecturer described some of the extinct animals which connect them, and showed their descent from common ancestors. Beginning with the Dinosaurs, and passing the huge *Atlantosaurus*, a creature 25 feet high and 35 feet long, we come to the singular Bird-reptiles, characterised by long tails and large teeth; and so by degrees we arrive at the *Ichthyornis*, a true fossil bird, but with clear traces of a reptilian ancestry.

Monthly Meeting held on February 18th, 1904, Mr. E. Charles Ozanne, C.S.I., in the chair.

The Hon. Secretary reported the receipt of several books and publications.

The principal portion of the evening was occupied by the "Study of a Butterfly," the different aspects of the subject being successively dealt with: and this method of treatment proved exceedingly entertaining and instructive. Mr. W. A. Luff gave the general life-history of a butterfly, commencing with the egg, and described the transformations which the insect undergoes before attaining its perfect state. Mr. E. D. Marquand confined his remarks to details of structure, pointing out how insects in general, and butterflies in particular, differ from other representatives of the animal world. Mr. A. Collenette traced the evolution of the insect race from remote ancestors, and showed their close relationship to the crustacea, and other members of the great class of Articulata. Blackboard sketches illustrated the various subjects, and a very pleasant evening concluded with an animated discussion on some of the points raised.

Monthly Meeting held on March 16th, 1904, Mr. E. D. Marquand, A.L.S., Vice-President, in the chair.

The following ladies and gentlemen were unanimously elected members of the Society:—

Miss S. Guille, Mrs. N. Parker, Mr. P. De Baugy, Mr. Charles Blampied, Mr. Julius Bishop, and Dr. R. A. Coles.

Dr. W. Duncan, who some years ago resided in British Guiana, read a most interesting paper entitled "Home life among the Caribs," exhibiting objects and drawings to illustrate his subject. The domestic occupations of the Indians of Guiana, their peculiar modes of fishing and hunting, the preparation of their food, their methods of warfare, and their social festivities, were successively described by the lecturer, who dwelt at some length on the cultivation and preparing of the chief vegetable product of the country, Cassava *(Menihot utilissima)* from which is made the staple articles of diet, Cassava bread and Pepperpot, and also an intoxicating liquor known as Paiwârie.

Mr. J. Hocart exhibited specimens of ancient pottery recently discovered in commencing quarry works on a hill at L'Ancresse close by the Fairy Well, at Fort Le Marchant. Tradition says that a dolmen once crowned the summit of this hill, but no trace of it now remains. Out of the fragments discovered, Mr. Hocart had succeeded in reconstructing a small urn almost complete; and some of the pieces of larger vessels bore traces of ornamentation and parallel horizontal moulding. Among these fragments were also found a few flint cores and chips, and one good arrowhead.

The Chairman read a communication from the President (who was unable to attend last month's meeting) on the subject of the internal anatomy of insects, more especially the nervous system, and its relation to that of the higher animals. These notes were elucidated by one or two well-executed drawings.

Mr. A. Collenette exhibited specimens of the Red-breasted Merganser, as well as other birds having denticulated bills, and explained their structure.

Monthly Meeting held on April 20th, 1904, Dr. J. Aikman, President, in the chair.

The following gentlemen were unanimously elected members of the Society :—

Messrs. F. Arnold, R. Singleton, and J. Veale.

Mr. F. L. Tanner, L.D.S., F.R.C.S., read a paper on "The Origin of our Coal Supply," showing how the ancient forests and vegetation which now formed coal grew

on the actual sites of the present deposits, so that the physical aspects of our country must have vastly altered; he then described some of the principal plants which go to the formation of coal, and explained how in the course of ages the process of conversion has gone on. Fossils illustrative of the coal-measures were brought down from the Museum and exhibited. In the discussion which ensued further information was elicited relating to the great Carboniferous era.

Mr. A. Collenette exhibited a Carp which was recently brought alive to the Museum, said to have been captured in Belgrave Bay: the probability being, however, that the fish came from the Vrangue pond. A Black-tailed Godwit, recently shot in Herm, the first specimen noticed in the Sarnian Islands, was also exhibited.

Monthly Meeting held on May 18th, 1904, Mr. W. Sharp, Vice-President, in the chair.

Mr. A. Collenette, F.C.S., discoursed on "The Occurrence of Gold in Rocks," and showed how it generally appeared in connection or mixed with other metals such as silver, copper and iron, though gold often occurred combined with other elements, forming an ore less easily distinguished. Sometimes the precious metal is found in veins, lodes, pockets, and even in sand washed down by rivers. The occurrence of minute quantities of gold in Guernsey rocks is well known, but it is rare. Mr. Collenette also explained why gold is so frequently found perfectly pure, in separate grains and nuggets.

Mr. E. D. Marquand read some notes on the "Early Life of the Young Cuckoo," extracted from an interesting little book by Mr. W. Percival Westell, recently published. It has now been proved that the Cuckoo first lays its egg on the ground, and then carries it in its beak to the selected nest. If two eggs are found in the same nest they have been deposited by different Cuckoos. When only twenty-four hours old, the young Cuckoo begins to eject the other occupants of the nest, both eggs and young birds, and for this purpose possesses a depression in the middle of its broad back which becomes filled up after it is twelve days old. The process of ejectment is admirably shown in a series of photographs from nature in Mr. Westell's book.

Mr. W. A. Luff exhibited specimens of non-British insects found in the Sarnian Islands, some of which (Hemiptera) had recently been captured in Herm.

Monthly Meeting held on October 19th, 1904, Dr. Aikman, President, in the chair.

The Hon. Secretary announced the receipt of a number of books and publications for the Society's Library, a full list of which will be given in his Annual Report.

Lieut.-Col. T. W. M. De Guérin read a paper on "The Early History and First Siege of Castle Cornet," a very valuable contribution to our historical records, which will be found printed in full in the following pages.

Mr. E. D. Marquand exhibited an egg of the Kittiwake Gull, taken by him at Herm this year. This is the first authenticated instance of this bird breeding within the Sarnian area. More will be said about it in the Ornithological Report.

Mr. G. Derrick passed round for inspection a glass bead about the size of a large pea, found at Le Crocq, Richmond, by Mr. Le Messurier whilst collecting specimens of ancient pottery (probably neolithic) from the deposit discovered on the beach there several years ago by members of this Society.

Mr. W. A. Luff exhibited some flint flakes which had been picked up on the same occasion; and also a number of living specimens of the Water Spider (*Argyroneta aquatica*) lately discovered at the Vale, by Mr. Marquand. This species is new to the Channel Islands, and Mr. Luff gave an interesting account of its habits.

Monthly Meeting held on November 16th, 1904, Dr. Aikman, President, in the chair.

Miss M. Cox, Mr. B. T. Rowswell, and Mr. G. F. Allès were unanimously elected members of the Society.

On behalf of Mr. G. Dalgliesh, now on the Natural History staff of the British Museum, Mr. W. A. Luff read a paper on "British Bats," which is printed in the following pages. In the general conversation which followed it transpired that only three species of Bats had been identified in Guernsey. Mr. Collenette traced the develop-

ment of this order of animals, and exhibited specimens from the Guille-Allès Museum, both British and foreign.

Mr. E. D. Marquand read a paper on "The Flora of Herm," which will be found further on in these pages; and afterwards exhibited specimens of three Flowering Plants new to Guernsey, found this year, and other botanical rarities. Referring to the existence of a submerged forest in Alderney, Mr. Marquand said he did not think the subject was generally known to the members, as no record of it had been made in the *Transactions*. He would therefore read a letter which he had inserted in two of the Guernsey newspapers in July, 1901, the main portion of which ran as follows: —

> "A few days ago, while walking along the shore of Longy Bay, Alderney, my attention was drawn to some dark brown patches extending for twenty or thirty yards among the shingle, about mid-tide level. These patches proved on examination to be a soft kind of peat, on the surface of which were embedded the remains of trees and branches, as well as fragments of timber, the whole closely resembling what I have seen in Vazon Bay, and also in Cornwall. The peat was sufficiently soft to allow of its being easily cut with a pocket-knife, and I secured three fairly characteristic specimens which I hope to present to the Guernsey Museum as soon as they are dry. It should be noted that Longy Bay lies almost exactly opposite the nearest point of the French mainland, and it may be that ages ago a large portion of the Race of Alderney consisted of forest land."

Mr. W. A. Luff exhibited some extremely rare insects, mostly of small size, recently taken in Herm; and read a paper on the remarkable absence of the common Hive Bee from that island, which appears in the current number of the *Entomologist's Monthly Magazine*. Living specimens of the Mole Cricket were also shown, and were described as being locally abundant in Guernsey, often causing much injury to crops.

Monthly Meeting held on December 14th, 1904, Dr. J. Aikman, President, in the chair.

Mr. W. A. Luff, F.E.S., read a paper on the "The Insects of Herm and Jethou," which is printed in the present *Transactions*.

The Secretaries of various Sections read their respective Reports, as follows :—

REPORT OF THE BOTANICAL SECTION.

The principal botanical work this year has been done in the island of Herm, where considerable additions have been made to the phanerogamic flora, and a very good list of Mosses and Hepaticæ compiled. Full particulars and lists have already been communicated to the Society, and will be found elsewhere in the pages of these Transactions.

As regards Guernsey, there are but few additions to report, because the Flowering Plants and Ferns have been so thoroughly worked up that novelties are not likely to be found very frequently. During this year, however, I have met with three species not hitherto seen within our area. It is true they are Aliens or Casuals, and not true natives ; that is, they are plants which are entirely foreign to our district, although classed among British species ; and they must have been accidentally introduced into the island in some way, perhaps with ballast or agricultural seeds. Very possibly they will not hold their footing in the localities where they were found, but may die away, and perhaps be seen no more for many years.

Yet it is always advisable to note the occurrence of these fugitive plants (except, of course, when they are obvious escapes from cultivation) because, if they should establish themselves in a locality, as many do, the date of their first appearance will prove of great value to future botanists. For want of doing this in the past we have now no means of knowing when such foreign species as *Veronica Buxbaumii* and *Allium triquetrum* (both abundantly distributed in Guernsey) first appeared in the island, although the locality and date of their first appearance in England is well known. And then it must be remembered that every plant now classed as a Denizen or a Colonist was at one time merely a Casual,—a stray weed, which subsequently became established, and in course of years has attained its present rank.

The three additions to the Guernsey flora are as follows :

Camelina sativa, *L.* Gold of Pleasure. One large plant on the coast near Mont Crevelt, S. Sampson's, July 30. Unrecorded for the Channel Islands.

Carum Carui, *L.* Caraway. Three or four plants on a rubbish heap close to the Rabbit Warren, in May last. Unrecorded for the Channel Islands.

Digitaria sanguinalis, *Scop.* About a dozen roots of this handsome grass were growing in August on the side of a lane behind Lancresse Lodge, Vale. New to the Sarnian Islands, although not rare, and considered native, in Jersey.

One of the most delightful surprises of the year, at least to me, was the re-discovery of the long-lost Great Reed Mace (*Typha latifolia*), a fine waterside plant which at one time flourished in Guernsey, but which was believed to have become extinct thirty or forty years ago, owing to the drainage of marshy land. In September I discovered a large patch of it in flower in an old quarry about a quarter of a mile to the east of the Vale Church. The plant is inaccessible without the use of a boat, or by swimming, as it grows in the water at the foot of the deep perpendicular face of the quarry.

Another very interesting find was *Scleranthus annuus*, which Mr. Derrick found growing on the cliffs near Mont Herault, during the Society's excursion to Pleinmont in August. This plant had not been seen in Guernsey for very many years. It occurs on the cliffs in Alderney and Herm, but is extremely rare; it is more common, however, in Sark.

Some time ago, among the unconsidered treasures of the Museum, I found a collection of plants preserved in sheets of white paper tied up in brown wrappers. There is nothing whatever to indicate by whom this collection was made, or to whom it originally belonged; but the collector was undoubtedly a capable botanist, as all the specimens are most carefully laid out, accurately named, and in excellent preservation. Many of the plants are dated in the early forties: some as early as 1838 and 1839 (the very time when Professor Babington visited the Channel Islands, and published the *Flora Sarnica*) and a few in the fifties. The bulk of the specimens have unfortunately no locality noted, but where places are mentioned they are all in Guernsey or Herm.

The following species are included in the collection and are particularly interesting, as they show where some of our rarest plants grew sixty years ago, though since then they seem to have disappeared from these stations:—

Hypericum linarifolium. Moulin Huet, 1845. This is the earliest record we have of this very rare species.

Galium saxatile. Saints Bay, 1839. Only recorded hitherto from L'Ancresse where it is very local.

Fragaria vesca. A specimen is marked "Câtel," but no date is given.

Inula Conyza. Clarence Battery, 1842. Very likely this is Babington's old station for the plant; "Fort George, Guernsey."

Pulicaria vulgaris. Two fine specimens marked: La Lande, Vale, 1843. A new locality for this (now extinct) species.

Atropa belladonna. Bordeaux, Vale, 1843. Only two previous records exist of the occurrence of the Deadly Nightshade in Guernsey; one over a century ago, found by Joshua Gosselin; the other about the year 1860. All were found in the Vale parish.

Ophrys apifera. Two uncommonly large specimens are labelled: Bec du Nez, 1845. Only recorded from the Vale, and at the present time nearly extinct. This evidence of the former occurrence of the Bee Orchis on St. Martin's cliffs is of the greatest interest, and it is confirmed by the testimony of Mrs. Aikman, who tells me that she remembers finding three specimens of the Bee Orchis on the cliffs near Petit Port some forty years ago. The plant may perhaps grow in these localities still, for there seems no reason why it should have disappeared.

Spiranthes æstivalis. Grande Mare, July, 1855. S. H. Haslam. The earliest record for this plant in Guernsey. The name of Mr. Haslam, who died in 1856, is occasionally mentioned in the *Flora Sarnica*.

The only new Cryptogams which I have to record this year for Guernsey are a few Fresh-water Algæ, of which five species are Desmids. Considering the remarkable scarcity of these beautiful microscopical plants in this island, this is quite an important addition, more especially as three out of the five represent new genera.

Vaucheria submarina, *Berk.* Brackish pool at Pulias, Vale.

Oscillaria antliaria, *Jurg.* Common, especially in autumn, at the base of walls, forming coal-black patches.

Microcoleus gracilis, *Hass.* Albecq, in rock crevices, above high-water mark.

M. terrestris, *Desm.* On moist ground. Lane at Cobo. Saints Bay.

Lyngbya æstuarii, *Lieb.* Brackish pool at Pulias.

Symploca Ralfsiana, *Kütz.* Overspreading mosses on the edge of a small pool at the eastern end of L'Ancresse Common.

Hyalotheca dissiliens, *Sm.* Plentiful in a marsh on the coast between Fort Doyle and Fort Le Marchant.

Euastrum oblongum, *Grev.* With the last species, one specimen.

E. ansatum, *Ehr.* With the two preceding species, scarce.

Cosmarium undulatum, *Corda.* Roadside streamlet, Enfer Lane, Grande Mare; scarce.

Spirotænia obscura, *Ralfs.* Marsh between Fort Doyle and Fort Le Marchant; a few specimens.

E. D. MARQUAND, Sec. Bot. Sect.

REPORT OF THE FOLKLORE SECTION.

The publication last year of the late Sir Edgar MacCulloch's voluminous collections of "*Guernsey Folklore*," with the valuable editorial additions of Miss Edith Carey, formed a memorable epoch in the history of all kindred

local investigations. Indeed, so abundant is the harvest therein reaped and garnered, that subsequent gleaners will find it difficult to gather anything local that is really new in principle. The most that we can now hope to do, is to record successive and additional illustrations and incidents to prove that the same old beliefs are still current, and that they keep frequently cropping up, under slightly varying conditions, which go to prove that this old-time faith yet counts among us many consistent followers, and in its own essential quality, hardly seems to alter at all.

This persistence of belief is curious, and is well worth noting; though it may not be quite so interesting as the discovery of actual novelties would be. Yet it presents certain strange psychological phenomena; and it conclusively proves that a considerable degree of intellectual acuteness, and mental culture, and social refinement may exist—and indeed do exist—in the very self-same persons who also harbour many a crude form of superstition, and are influenced by phases of unaccountable credulity. Indeed, this kind of traditional faith seems to be in no way changed by scholastic learning. As a case in point, take the widely-spread local belief in fatalism—the belief that what *is* to be *will* be, in spite of all that we can do to prevent it. Popular opinion holds, for instance, that we *ought* to do all that we can to avert an evil, or cure an illness,—at the same time asserting that nothing that we *can* do will really have any permanent effect. If the evil *is* to come, it *will* come; if the illness is predestined to be fatal, it will be fatal. If one points out the illogical character of such reasoning as this, and the utter futility of taking remedial measures which, if such arguments are true, would be entirely unavailing, we are met by the rejoinder that:—We are 'commanded' to do what we can. And such asserted 'command' is supposed to finally settle the matter.

Yet perhaps after all there is more real excuse for this credulous aspect of mind than would at first sight appear to be reasonable. For very startling coincidences do often occur—coincidences that no one can explain, and which yet no one can deny. I mean, for instance, such coincidences as one often observes, say, between the use or working of a certain 'charm' or 'spell,' and the sudden and inexplicable disappearance of the evil, or the illness, or whatever else it may be, that such 'charm' is supposed and intended to avert or remove. One can hardly wonder if in some of these cases coincidence is mistaken for causation; and that in minds

open to such beliefs, the fact that one event *follows* the other, becomes twisted into the conviction that therefore the one is caused by or wrought-out by the other.

One branch of Guernsey Folklore which very badly needs working up—if it be not already too late—is the collection and recording of the ancient Folk-stories that, in years gone by, figured so prominently at social gatherings on the Long Night, or at other similar festive or family reunions. There used to be in every parish, one or more men or women, who possessed a marvellous stock of these wonder-stories, which they narrated with a considerable degree of skill, greatly to the delight of their auditors. The narrator was often the village shoemaker or tailor—or in the case of women, perhaps the dressmaker. They used to go out to work at the homes of their different customers in turn, and the 'oft told tales' with which they enlivened their labour, added much to the general enjoyment of the occasion. In fact, I have often been told that this Folklore budget was really a valuable commercial asset; because, other things being equal, the out-worker who enjoyed the reputation of being a skilled and graphic story-teller, had important preferential chances of employment, beyond what fell to the lot of trade rivals who though, perhaps, quite as skilful with the needle, were not equally gifted as *trouvères* and folklorists. I am afraid, however, that all these interesting old worthies have long since passed away, and doubtless the flight of time has also destroyed the traces of most of their strange and weird legends. But if any of the latter do yet remain—though in but a fragmentary form—I hope any of our members who meet with them, will carefully jot down the details.

I recently came upon a local transcript of a 'charm' for curing the toothache. The 'charm' is widely known in England, but this is the only copy of it that I have seen in Guernsey. The very erratic spelling, &c., of the original has been corrected in the following version :—

"As Peter sat weeping by the gate of Jerusalem, Jesus passed by. Jesus said unto Peter: 'What aileth thee?' Peter said: 'I am suffering with toothache.' Jesus said: 'Rise up and follow me, and I will ease thee of thy pain; and all them that will carry these few lines for my name's sake. Amen.'"

I have also lately met with and noted several other examples of folk-medicine including remedies for whooping-cough, also cures for boils and abscesses, cramp, warts, &c.

J. Linwood Pitts, Sec. Folklore Sect.

REPORT OF SECTION FOR MARINE ZOOLOGY.

Although this section has not yet existed two years, I am glad to say that it has made substantial progress. On the systematic side of the work Mr. E. D. Marquand, A.L.S., reports as follows :—

There is probably no one living at the present time who possesses such a profound critical knowledge of the British Marine Mollusca as Mr. J. T. Marshall, and certainly no one who knows so much about the shells of the Channel Islands. I had the pleasure last summer of spending many delightful hours in Mr. Marshall's company, during his stay of a few weeks in Guernsey. He very kindly looked through my wife's collections of marine shells from Guernsey and Alderney, and his sharp eye detected several forms which we had overlooked or confused with others, and which consequently were omitted from my two published lists. This enables me to add the following novelties for the two islands, a few of the forms being new to the Sarnian area :—

Modiolaria marmorata, *Forb.* Alderney, in corallines between tide-marks.

M. costulata, *Riss.* Bordeaux, Guernsey, one valve (Mrs. Marquand).

Loripes lacteus, *L.* Two valves, Braye Bay, Alderney.

Lucinopsis undata, *Penn.* Alderney, one valve.

Saxicava rugosa, var. *præcisa,* Mont. Bordeaux, Guernsey (Mrs. Marquand).

Teredo megotara, *Han.* Abundant in a log of wood washed ashore in Alderney in 1902. Erroneously recorded last year as *Xylophaga dorsalis.*

Littorina rudis, var. *saxatilis,* Mont. A very dwarf nearly black form occurs in abundance in *Lichina* at high water mark in Guernsey and Alderney. Recorded by error as *Assiminea littorina.*

Rissoa cingillus, *Mont.* Two specimens of a deep purple colour, without the usual bands, were found alive in Alderney by Mrs. Marquand, among var. *rupestris.* Mr. Marshall, who identified them, said he had never seen such a form before.

Odostomia rissoides, var. *glabrata,* F. & H. Alderney.

O. pallida, var. *angusta,* Jeff. Alderney.

O. unidentata, *Mont.* Alderney, one dead specimen.

O. Warreni, *Thomp.* One specimen in Alderney shellsand.

Nassa pygmæa, *Lam.* Guernsey (Marshall). Alderney, dead in shell-sand (Marquand).

Defrancia reticulata, *Ren.* Two worn specimens in Alderney shellsand.

Pleurotoma rufa, var. *lactea,* Jeff., Alderney. Var. *prælonga,* Marsh. Shell beach, Alderney, with var. *semicostata.*

In Mr. J. W. Taylor's splendid monograph of the Land and Fresh Water Mollusca of the British Isles, now publishing in parts (which, I am glad to know, is subscribed for by the Guille-Allès Library) a few slugs are recorded for our

area which were not included in the list of Channel Islands species published by Mr. Tomlin and myself, two years ago, in the *Journal of Conchology*. These are as follows:—

Testacella haliotidea, *Drap.* Guernsey and Sark. Mr. Taylor states that "in the British Isles this species is recorded as first noticed in 1801 by Dr. F. C. Lukis in his garden in Guernsey." Both *T. scutulum* and *T. Maugei* are also recorded as occurring in the Sarnian islands.

Limax maximus, var. *sylvatica*, Morelet. Herm (Reeve, Brit. Moll. 1863, p. 26 and fig.).

Amalia gagates, var. *pallidissima*, Poll. St. Sampson's, Guernsey, Sep., 1891, B. Tomlin. Var. *bicolor*, Tayl. St. Sampson's, Guernsey, Sep., 1891, B. Tomlin. The latter is the unnamed reddish-brown slug mentioned in our list above referred to, and this locality is the only British one recorded for it in Taylor's Monograph.

Helix aspersa, var. *albo-fasciata*, Jeff. A typical shell of this variety was found this year at the Vale by Mrs. Marquand. First record for our islands.

In that branch of our work to which special attention was directed in the first report, namely, the observation of habits and life histories of marine animals, a start has at last been made.

In the early part of the summer a marine aquarium was started at the States' Intermediate School in a tank kindly lent by the Guille-Allès Museum authorities. An attempt was made to breed the Ormer (*Haliotis tuberculata*) and examine the structure and habits of the young mollusc; unfortunately the whole summer was taken up in discovering and eliminating the conditions under which the animal would *not* live in captivity; but the experiments are being continued by Dr. Fleure at Aberystwyth, and we hope to be more successful next year, with previous failures to guide us. Valuable assistance and advice have been most willingly given during the experiments by Mr. Frank Slade, the naturalist at the Horniman Museum, to whom we have been able to send some Guernsey marine specimens (alive) for the aquarium which he keeps at the Museum.

During July Dr. Fleure made some interesting observations on the common Limpet (*Patella vulgata*) at Bordeaux Harbour. He marked eight limpets and the spots to which they were attached, and then moved them to distances of a foot or more; at the end of four days he found that one had got back to its home, and four more had moved as if to do so; the other three were missing or unrecognisable, because the paint had worn off. It had been previously proved that on soft rocks, limpets have definite homes, and this observation seems to suggest that the same holds for

our granite rocks here; but it is hoped that some of our members will repeat the experiments in other localities, and under varied conditions, so as to confirm the above conclusion. During some boating excursions in the summer, I discovered that the Opelet Anemone (*Anemone sulcata*) occurs in great numbers in the town harbour just below low tide mark near Castle Cornet. This zoophyte generally attaches itself to the under surface of an overhanging rock, or to some broad weed, but at this spot there are literally thousands of them to be seen clinging to the strands of the long green marine plant *Zostera marina*, and as the leaves are only about a quarter of an inch broad, the animal has to bend its foot right round them to get a sufficiently secure hold.

A very promising field of research offers itself in the study of those marine gastropods (Top-shells and others) which live at or above ordinary high-water mark; very little is known as to the conditions under which they can exist, how much exposure or immersion they can or cannot bear, and many other interesting points in their life histories. I hope that during the year some member or members will take the matter up, so that our next year's report may answer some of the questions suggested in this one.

R. C. MABBS, Sec. Mar. Zoo. Sect.

The President said that as he would unfortunately be unable to attend the Annual Meeting next month, he would take the opportunity now of reading his valedictory Address as official head of the Society, and of thanking the members of the Council for the cordial support they had given him during his two years of office. Dr. Aikman then read his Address, which is printed in the following pages.

Mr. A. Collenette, on behalf of the members, very warmly thanked Dr. Aikman for the zealous manner in which he had forwarded the interests of the Society during his tenure of office, and the increase of membership which he had brought about. The members were unanimous in their regret that the rules prevented an extension of Dr. Aikman's term as President, but he would always hold an important position as Vice-President.

The Hon. Secretary read a letter from the Rev. I. H. Bibby, Rector of St. Saviour's, describing a cist recently discovered in the churchyard of that parish. The small

vertical stones were about a foot high, enclosing a space six feet long, and rested on the undisturbed rock. The covering stones were about two feet below the surface, 15 to 18 inches long, and flat on the inside. In the interior only a few bones were visible, which crumbled to dust when touched. On another occasion a large quantity of limpet shells and a few ormers were found six feet deep on the rock.

The President announced that 75 replies had been received to the circular relating to the proposed increase of the annual subscription, a copy of which, with a stamped reply-card, had been sent to each member; and of these 59 were in favour of the increase, 11 were against it, and 5 expressed no opinion either way.

The Twenty-second Annual Meeting of the Society was held on January 18th, 1905, Mr. W. Sharp, Vice-President, in the chair.

Dr. Herbert J. Fleure, D.Sc., Fellow of the University of Wales, was unanimously elected a member of the Society.

The remaining Sectional Reports were read as follows :—

REPORT OF THE GEOLOGICAL SECTION.

St. Andrew's Road, near Brickfield.

A very fine section of superficial deposits composed of clay and sand in alternate layers, of the Route Isabelle type, has been exposed by excavation near the house lately purchased by Mr. Best from Mr. T. Nant. The thickest part, about 8 feet deep, is towards the north-west, that is, towards the Talbots Valley; but from neighbouring exposures, the deposit does not appear to continue in that direction, but seems rather to be the filling up of a small depression running into the branch valley to the southward, which branch valley falls into the Talbots Valley. The curved veins also point towards this branch valley. Mr. Derrick noticed in the clay some streaks of dark material about ¾ inch wide.

Rabbit Warren Lane and Salines Lane.

An excavation in the level east of Hougue des Quartiers, showed a plastic blue clay with sharp sand in patches, and a few flint pebbles up to ¾ inch in diameter. Very similar deposits were also seen in Salines Lane, but owing to the

shallowness of the excavation, the details could not be ascertained.

Cliffs near Icart, St. Martin's.

A small depression near the quarry bordering the cliffs has lately been levelled. It was previously marshy, and in excavating, a layer of plastic blue clay with gritty particles of gneiss about 5 feet thick was found under the peaty soil. This in its turn was underlaid by a foot or more of peat, through which the gneiss rock protruded in ridges.

Les Genâts, Câtel.

The discovery of a bone, part of the *os sacrum* of a sheep, or other small animal, in this neighbourhood has been reported. Although this bone was found in soil which had been previously disturbed, its appearance leaves no doubt as to its belonging to the prehistoric period. The locality where it was found is the margin of the Mare de Carteret, the deposits of which have been described in previous reports with reference to the excavation of Lord De Saumarez's canal. In this case the soil was underlaid by a deposit of iron-stained sand with a layer of pebbles.

Ramée Road.

In the field opposite St. Catherine farm, an excavation of about 6 feet in depth shewed a homogeneous yellow loam, with some flint pebbles. In the excavations made for laying gas pipes in this neighbourhood, quantities of pebbles were turned up. These facts confirm the existence of an ancient beach previously believed to exist in this vicinity.

Mr. Falla's gravel quarry near the Griffon Tower, Câtel.

This quarry, which has been previously referred to, now presents a fine exposure of a mass of amorphous diorite or talvane, with some smaller outlying portions, the whole forming inclusions in the granite, which belongs to the Cobo red granite formation. Though both the diorite and granite are decomposed, their outlines are well seen owing to the contrast of colour.

C. G. De La Mare, Sec. Geol. Sect.

REPORT OF THE ENTOMOLOGICAL SECTION.

The Entomological Section has to report a very successful season. No less than 15 additions have been made to the

Guernsey list; most of them captured by Mr. E. D. Marquand, who has worked hard both in Guernsey and Herm. *Lampides Bœtica*, (the Long-tailed Blue Butterfly) has again appeared, and the Rev. F. E. Lowe reports the capture of specimens in his garden from September 22nd to the end of the month. They were not numerous, and most of them were undersized. Mr. Baker who had planted its food plant *Colutea arborescens* (the Bladder Senna) in his garden, kept a good look out for the butterfly, and on July 19th was delighted to see a specimen laying her eggs on the seed pods. Eggs were also deposited on July 21st and 28th. On July 31st two butterflies were observed. Eggs were again laid on August 1st, 2nd, 3rd and 4th. On August 16th a larva was found inside a seed pod, nearly full fed. Shortly afterwards Mr. Baker gathered the pods and bred a number of the perfect insects. On October 1st the last specimen emerged from the chrysalis. These observations are most interesting and valuable. In Newman's British Butterflies it is stated that "The last disclosed females of this species lay their eggs on the twigs of the Bladder Senna (*Colutea arborescens*), but, like those of several, and perhaps all, the British species of this family, they do not hatch until the following summer, at which season the young pods of the Senna are sufficiently advanced to serve as the food of the young caterpillar."

Colias Edusa (the Clouded Yellow) has been observed on several occasions but they have not been numerous. In Jersey I noticed numbers flying near St. Ouen's Bay on October 12th.

Sphinx Convolvuli (the Convolvulus Hawk Moth), has been fairly plentiful. The first specimen was brought to me by Mr. Derrick on September 2nd, and I received eight others from September 3rd to 16th. I have not seen or heard of a specimen of *Acherontia atropos* (Death's Head Moth) being taken either in the larval or perfect state this season.

Two specimens of *Himera pennaria* (the Feathered Thorn Moth) have been taken at light, by the Rev. F. E. Lowe. These are worth recording, as it is not a common species with us.

A species of *Lithosia*, wrongly named in the *Transactions* for 1901 as *Lithosia sericea*, turns out to be the rare and local *Lithosia caniola*. Mr. Baker bred the moth from larvæ collected on the cliffs near the Gouffre.

The pretty little moth, *Gelechia Hermanella*, is an addition to the list of *Micro-Lepidoptera*. It was captured by Mr. E. D. Marquand during August at L'Ancresse.

The best capture among the *Coleoptera* is that of *Æpus Robinii*, a curious little beetle found at about mid-tide level on the Vale Coast by Mr. Marquand. It has not been recorded before for Guernsey, although Mr. J. Sinel in his paper on "Submarine Air-breathing Animals" in the *Transactions* for 1890 says it is plentiful on the Jersey coast.

During the early part of June, thousands of dead cockchafers (*Melonthia vulgaris*) were washed ashore round about Braye Bay and Platte Saline in Alderney. The event was noticed in the local papers, and the London "Globe" added the following of its own:—"Now the beach and water are positively brown with them, and the people of Alderney are beginning to complain. Even the cliffs, it is said, are beetling." It is conjectured that they swarmed on the adjacent mainland and were driven out to sea during a terrific thunderstorm that occurred on the previous day. The same phenomenon has been noticed before, by that observant naturalist, the late Dr. F. C. Lukis. In a local Guide published in 1863, he says:—"The sea after many a glowing autumn day is not infrequently strewed for miles with swarming ants, and the beach sprinkled with the rejected thousands of dead cockchafers."

Four additions to the *Aculeate Hymenoptera* of Guernsey have to be recorded, all taken at L'Ancresse by Mr. Marquand. Of these *Halictus zonulus* is new to the Channel Islands. Mr. Marquand also took two new species of *Chrysididæ* or Ruby Wasps, *Hedychridium integrum* and *Ellampus auratus*, in a sand pit on L'Ancresse Common. These are beautiful metallic coloured atoms, only flying when the sun is shining brightly on hot days.

On August 22nd I took near Grandes Rocques a very rare Ichneumon fly, *Melanichneumon nudicoxa*, which is new to the Guernsey list; there is only one record of its capture in Great Britain. Another Ichneumon fly, *Pimpla pomorum*, is also an addition; it was captured in my garden at Brock Road on August 17th. During August Mr. Marquand captured a specimen of *Phryganea varia*, one of the largest of British Caddis flies, at the Vale.

The Pear Midge, *Diplosis pyrivora*, has proved rather destructive this season in Great Britain, and infested pears from Guernsey were sent to the Editor of "The Fruit Grower," who said, "It would be interesting to know how the insects got to the islands. Probably the midge has been carried by the wind."

On applying to Mr. H. C. Smith, of the Caledonia

Nursery, for further information, he stated that he had looked for the insect before, but never actually saw it until this year, and then in only two gardens where pear trees had been growing for ages. Not a trace of it was seen in the nursery. The pear crop has suffered from this pest more in Jersey than in any other place in the British Islands.

The life history of the insect is briefly as follows :—The parent, a small fly, oviposits in the pear blossom as soon as the petals show themselves; a dozen or more eggs are laid, from which the larvæ quickly hatch. These immediately begin to eat their way towards the centre of the embryo pear, which, by reason of the irritation, increases rapidly in size, ultimately splitting open and falling to the ground. The larvæ pupate in the ground, appearing as perfect flies during the spring of the following year.

The Water Spider, *Argyroneta aquatica*, which has never before, to my knowledge, been recorded for the Channel Islands, has been discovered by Mr. Marquand in great numbers in two quarry pools at the Vale.

A list of the Insects of Herm and Jethou has been read before the Society, and will be published in the present *Transactions*.

ADDITIONS TO THE GUERNSEY LIST.

LEPIDOPTERA.

Lithosia caniola, *Hb.* Several specimens bred by Mr. Baker from larvæ found on cliffs near the Gouffre.

Gelechia Hermanella, *F.* One specimen captured by Mr. E. D. Marquand during August at L'Ancresse Common.

COLEOPTERA.

Æpus Robinii, *Lab.* One specimen taken by Mr. E. D. Marquand at Grand Havre, Vale, on the shore at about mid-tide level. Mr. Marquand says he has been on the look-out for this species for many years.

HYMENOPTERA-ACULEATA.

Pompilus plumbeus, *Fab.* Several captured by Mr. Marquand on L'Ancresse Common.

Ammophila hirsuta, *Scop.* Two female specimens captured by Mr. Marquand at the Vale.

Prosopis brevicornis, *Nyl.* Taken by Mr. Marquand at L'Ancresse.

Halictus zonulus, *Smith.* Several specimens of this addition to the Channel Islands fauna taken by Mr. E. D. Marquand at L'Ancresse in August.

CHRYSIDIDÆ.

Hedychridium integrum. Taken in a sand pit on L'Ancresse Common by Mr. Marquand during August.

Ellampus auratus, *Westm.* Taken in company with the above by Mr. Marquand.

ICHNEUMONIDÆ.

Melanichneumon nudicoxa, *Thoms.* One specimen of this great rarity captured by myself near Grande Rocque on August 22nd.

Pezomachus ecarinatus, *Först.* One specimen taken at the Gouffre, June 14th, 1891.

Pimpla pomorum, *Ratz.* Taken in my garden in Brock Road on August 17th.

NEUROPTERA.

Phryganea varia, *F.* One specimen of this fine Caddisfly was captured by Mr. E. D. Marquand at the Vale during August.

DIPTERA.

Diplosis pyrivora, *Riley.* The Pear Midge. Noticed in several gardens in Guernsey. Has caused great loss in Jersey.

ARANEIDÆ.

Argyroneta aquatica, *Linn.* Found in great abundance by Mr. E. D. Marquand in a pool near L'Ancresse Bay, and also in a quarry pool not far from the Vale Church. Has not before been recorded for the Channel Islands.

ADDITION TO THE ALDERNEY LIST.

DIPTERA.

Sarcophila latrifons, *Fln.* One specimen taken by Mr. E. D. Marquand.

W. A. LUFF, F.E.S., Sec. Ento. Sect.

REPORT OF THE ORNITHOLOGICAL SECTION.

In the absence from the island of Mr. G. Dalgliesh, the Sectional Secretary, I have prepared a few notes on the birds of our islands, but before submitting these to you, I wish to say a word about the species which have already been authentically recorded.

Our principal authority on the subject—in fact, the only book we have—is the late Cecil Smith's "Birds of Guernsey, Alderney, Sark, Herm and Jethou," published in 1879. In this work the author states (p. 218) that he has enumerated for these islands 176 species on sufficiently clear evidence; but where the evidence was unsatisfactory, he has "thought it better to omit all mention of the bird, though its occasional occurrence may seem possible." This renders the book all the more reliable, for Smith was a skilful and experienced ornithologist.

In the list given in Ansted's "Channel Islands" (a bare catalogue of names), twenty-one additional species are noted as having occurred in the Sarnian area, but with regard to these, Smith says that (excepting a few mentioned in Mr. J. T. Gallienne's notes) he can find no evidence whatever as to when and where they occurred, or who was responsible for their identification. And so, very wisely and properly, he declines to include them in his book.

Now during the last twenty-five years several additions have been made, some recorded by Smith himself, subsequent to the publication of his book, and some recorded on trustworthy authority in the pages of our *Transactions*. It is well, therefore, in order to know exactly the extent of our ascertained avifauna, and to be able to compare it with that of other localities, to bring together these scattered records of rare visitors, as additions to the list made out by Cecil Smith. Unfortunately I have not had an opportunity of looking through the *Zoologist* and similar publications, or doubtless the number would have been larger; but we have reliable evidence that at least ten species unrecorded by Smith have occurred in our islands. These are as follows:—

Wall Creeper (*Tichodroma muraria*). In Alderney. (Marquand, *Trans.* 1903, p. 240.)

Nightingale (*Daulias luscinia*). In Guernsey. (Marquand, *Trans.* 1894, p. 319). In Alderney. (Marquand, *Trans.* 1903, p. 240.)

Red-legged Partridge (*Perdix rufa*). In Guernsey. (Cecil Smith, *Zoologist*, 1880.)

Pallas's Sand Grouse (*Syrrhaptes paradoxus*). In Guernsey. (C. Smith, *Zoologist*, 1888.)

Great Bustard (*Otis tarda*). See note below.

Black-tailed Godwit (*Limosa belgica*). See note below.

Pochard (*Fuligula ferina*). In Guernsey. (Dalgliesh, *Trans.* 1903, p. 204.)

Tufted Duck (*Fuligula cristata*). In Guernsey. (Dalgliesh, *loc. cit.*)

Sandwich Tern (*Sterna cantiaca*). In Guernsey and Herm. (Dalgliesh, *loc. cit.*)

Buffon's Skua (*Stercorarius parasiticus*). In Channel Islands. (C. Smith, *Zoologist*, 1882.)

The occurrence of the Black-tailed Godwit in Herm was the most interesting event of the year. Mr. Leicester Gore killed two birds (both males) with a right and left shot, on the 6th of April, and kindly presented them to the Guille-Allès Museum, where they are now preserved. In a note after speaking of the Bar-tailed Godwit, Smith says (p. 138): "The Black-tailed Godwit is also included in Prof. Ansted's list, but I have never seen the bird in the islands, or been able to glean any information concerning it, and there is no specimen in the Museum." Consequently he

does not include it in his list, so that this is practically the first authenticated instance of the occurrence of this species in the Sarnian Islands.

In looking through some old volumes of "Science Gossip," I came by chance upon an interesting article on the birds of the Channel Islands written by Cecil Smith in 1882, in which he says: "Mr. MacCulloch wrote to me not very long ago that Mr. Rougier, of Les Eperons, St. Andrew's, Guernsey, assured him that about forty years ago he had seen and shot in the fields on his estate several specimens of the Great Bustard. He is well acquainted with the small Bustard, and says the country people looked upon the large sort as a species of wild turkey." This magnificent bird, once a resident in England, is now extinct, and only on rare occasions are stragglers seen in the British Isles.

Until this year it was considered very doubtful whether the Kittiwake ever bred within our area, although it is well known to be a regular autumn and winter visitant. Smith states expressly that this pretty little Gull does not breed anywhere in the Channel Islands; but I am now able to prove that he was mistaken. I found on the coast of Herm in May last a single egg which at the first glance appeared to me to belong to the Sandwich Tern; but on comparing it afterwards with the eggs in my collection, I at once perceived that it was not a Sandwich Tern's egg, but the egg of a Kittiwake. To make certain, however, I sent it for identification to the British Museum, whence it was returned to me by Mr. Ogilvie Grant with a note stating that the egg was a Kittiwake's, "with unusually handsome markings, resembling those of a Sandwich Tern." The nest consisted simply of a layer of grey lichen (*Ramalina scopulorum*) placed on a horizontal ledge of rock.

Mr. B. Rowswell has kindly furnished me with notes of his observations on some of our Summer migrants during this year, which I am glad to have, as my own notes are but few.

Wryneck.—Arrived late this year; does not seem to have been generally dispersed in the island until the end of the first week in April, although reported to have been heard at St. Saviour's on the 27th and 31st of March. First heard by Mr. Rowswell on April 9, and noted by him almost daily at St. Martin's until July 19, after which the Wryneck's peculiar call was heard no more.

Cuckoo.—First heard by Miss Boley at St. Martin's twice on April 17. Last heard by Mr. Rowswell on June 29. In Herm I heard the Cuckoo on April 20, but the people living there told me it arrived on the 15th and had been singing every day since. The Guernsey newspapers reported that the Cuckoo was first heard this year on April 12 and 13, at the Vale and at Torteval.

Swallows.—Everywhere in the British Isles the Hirundines arrived late in 1904. The first Swallow I saw was flying over the sea on April 7, midway between Guernsey and Herm. Mr. Rowswell observed Swallows in numbers on the 20th of April both at St. Martin's and the Forest, and on the 9th and 12th of October saw quite a large number of House Martins, and among them a few Swallows, flying about the cliffs at Moulin Huet. He last saw them (five or six birds) on October 30.

Swift.—First seen by Mr. Rowswell on May 7, when a couple were circling round the Town Church. Last seen August 30.

Corncrake.—Heard at St. Martin's by Mr. Rowswell on May 19.

White Wagtail.—Mr. Rowswell notes the occurrence of two of these rather rare birds in a ploughed field at Calais, St. Martin's, on March 16; they were not seen again.

Blackbird.—A very handsome male bird, mottled all over black and white, was shot at Les Gigands, St. Sampson's, in November, by Mr. Thomas Ogier, who had watched it in his grounds from time to time all the summer. He kindly presented the specimen to the Guille-Allès Museum, where it is now preserved.

Redstart.—At Belvoir Bay, Herm, I saw at close quarters a Redstart on April 1, an early date for the appearance of this bird. Cecil Smith doubts the occurrence of this species in these islands; but I have shown (*Trans.* 1903, p. 239) that it not only occurs but breeds here.

Blackcap.—I saw one of these rare Summer visitants in Fermain Valley on October 9, 1903; a late date for this species. It was sitting on a bramble stem within a few feet of me. I find that the name Blackcap is often applied in this island to quite a different bird, and an abundant one on the cliffs, viz., the Stonechat.

Curlew.—I saw three of these birds on the shore of Herm on April 20, and heard their call-note. These birds occur in our islands all through the breeding season, but have never been known to nest here.

E. D. MARQUAND, Sec. Ornith. Sect.

A Synopsis of the recorded Fauna and Flora of the Sarnian Islands (printed in the following pages) was read by Mr. E. D. Marquand, who had compiled it with the assistance of Mr. W. A. Luff.

The proposal to increase the annual subscription to 7/6 was confirmed, and it was resolved to alter Rule III. accordingly.

Mr. G. T. Derrick, Hon. Secretary of the Society, read the following Report of the Council:

The Council are pleased to be able to report a year of increased activity in carrying on the work of the Society. The short lectures in the spring proved an attractive feature, and secured an increased attendance of members. The simple explanation of the subjects treated on is likely to attract new workers in the fields of scientific research. The special meeting at the commencement of the session, with Lantern Illustrations, besides being a most pleasant and instructive

entertainment, was the means of increasing the funds of the Society by something over five pounds.

The various sections of the Society have continued their good work, as will be seen from the Reports. Special mention must be made of Marine Zoology, for this branch of science should have a particular interest for Guernsey students, who have greater facilties for prosecuting their researches than almost any other station affords: and there is a practical certainty that Guernsey enthusiasts in this branch of study will discover species and even genera unknown hitherto in the British area, perhaps even entirely new to science.

The attendance at indoor meetings, and the number of members on the roll, are as large as at any period in the Society's history. As regards the summer excursions, the difficulty of finding entirely new districts to explore, seems to render it undesirable that a fixed programme should be drawn up, as has been done hitherto.

The Council regret to have to record that the funds are again insufficient to meet the expenses: they have found themselves therefore under the necessity of advising that the annual subscription should be increased to 7/6, and an appeal to the present members has resulted in the proposal being supported by a large majority.

The Society has to regret the removal from the island of two valuable, because active, members, Mr. J. B. Nicholls and Mr. G. Dalgliesh, and in the death of Miss Le Lievre loses one of its oldest members.

The Council, on behalf of the members, must again gratefully record their obligations to the Directors of the Guille-Allès Library, for the use of Rooms and the Electric Lantern, as well as for numerous other facilities which have always been readily and cordially granted.

The following books and publications have been received by the Society during the year, in return for which copies of our *Transactions* have been sent:—

Annual Report of United States National Museum for 1902.

Bulletins of Wisconsin Geological and Natural History Survey (from the Commissioners):—

IX. Lead and Zinc deposits of Wisconsin.
X. Highway Construction in Wisconsin.
XI. Soils of North Wisconsin
XII. Plankton of Lake Winnebago and Green Lake.
XIII. The Baraboo Iron-bearing District.

Transactions of Wisconsin Academy (Madison, Wisconsin), Vol. XIII., Part 2 (1901) and Vol. XIV. Part 2 (1902).

Proceedings of Academy of Natural Sciences, Philadelphia, Vol. 55, Part III. (1903), Vol. 56, Parts I. and II. (1904).

"Travaux Scientifiques de L'Université de Rennes," Tome II., Fascicule III.

Mr. W. A. Luff, Hon. Treasurer, reported on the present financial condition of the Society, and produced a Balance-sheet, of which the following is a condensed statement :

ABSTRACT OF THE TREASURER'S ACCOUNTS,

From 1st January to 31st December, 1904.

Dr.	£	s.	d.
Balance of last year's Account.....	5	0	6
Proceeds of Soirée held Jan. 26th ...	5	3	5
Members' Subscriptions	18	6	8
Copies of *Transactions* sold	1	10	6
Balance due to Treasurer	4	3	9
	£34	4	10

Cr.	£	s.	d.
Expenses connected with Soirée (Programmes, Tickets, &c.).....	0	16	10
Star Publishing Co.	2	17	11
Bichard & Co., printing *Transactions*.	29	5	0
Donation to Caretaker.....	0	15	0
Secretarial Expenses (Postages, &c.)..	0	10	1
	£34	4	10

Examined and found correct,

C. G. DE LA MARE,
ADOLPHUS COLLENETTE, } *Auditors.*

W. A. LUFF, *Hon. Treasurer.*

The retiring President, Dr. Aikman, having nominated the Rev. W. C. Penney, M.A., Principal of Elizabeth College, as his successor, the chairman formally proposed Mr. Penney as President of the Society ; and Mr. Derrick having seconded the proposition, Mr. Penney was unanimously elected. The Hon. Secretary and the Hon. Treasurer were re-elected by acclamation, and the ballot for the new Committee resulted in the election of the following gentlemen : Messrs. C. G. De La Mare, J. Linwood Pitts, R. C. Mabbs, F. L. Tanner, Lieut.-Col. T. W. M. De Guérin, and Dr. W. Duncan.

Mr. A. Collenette, F.C.S., read his Annual Report (published in the following pages) on the Rainfall and Sunshine of Guernsey for the past year, illustrating his remarks by means of a number of Electric Lantern slides.

PRESIDENT'S RETIRING ADDRESS.

BY JOHN AIKMAN, M.D.

IT does not fall to the lot of everyone to be a President. John o' Groats' experiment may have satisfied his family, but must have had its inconveniences. The Round Table of the Knights is a nearer symbol for the quest on which we are engaged, for it starts each on his way in search of the truth which we all seek. But in all scientific work there is an early bifurcation of roads, and a separation of those who travel by them. Very specially is this the case in a Society with such a comprehensive title as that to which we belong. Our common board, the round table at which we all sit, is Nature; our diversity is as the diversity of Nature. Behind each man's place, as in John o' Groat's House, there is a door by which he may proceed to his work, or his idling, but if it is idling, it is what Stevenson calls the "richest form of Idling." Some men spend their lives in the endeavour to acquire, for possession, large tracts of beautiful country; others, of whom our members should be a type, work to acquire the faculty of understanding and enjoying Nature—therein is the richness of our idling. Gladstone's ideal heritage of three acres and a cow holds secrets which are only partially hidden from our search; its Botany alone is a wealth of study, "the cleanest, the gentlest and the least costly of all the branches of science."

You place your President in the position of the large land-owner possessed of treasure, which, without your help, he cannot fully enjoy; and the help which you render is so ready, so sterling, so abundant, as to raise feelings of wonder, amazement and gratitude. There have been men in this chair who could dip deeper than any of their hearers into one or more of the branches of special study; I shall content myself if I secure your attention for some consideration of the pathways of knowledge. First of all, I wish to congratulate you on a new departure of the past session—the establishment of lecturettes on elementary subjects. As a recruiting agency, they should increase the number of our workers; from an educational standpoint their value is beyond computation. They give beginners a place at the round table, and they open a door at each man's back by which he may proceed silently and unnoticed upon his special quest.

I lay stress upon the term "his special quest," for there is a slough of despond around the ways of even the most earnest students which is apt to damp the ardour of beginners, and to soothe the consciences of the more experienced—

> "Does the road wind up-hill all the way?"
> 'Yes, to the very end.'
> "Will the day's journey take the whole long day?"
> 'From morn to night, my friend.'

Classification might be said to be the object of all Natural Science Societies; and the satire upon their work which brings it under the title of "idling" is that you explain everything by giving it a name, and then you have done with it. Your lecturettes should exorcise that ghost. No matter in what domain, the student of Nature is a devotee of arrangement; kingdoms, classes, orders, tribes, genera and species are words which are ever in his mind and on his lips. To the ignorant such words are a mere shibboleth, to the more informed an inexhaustible mine. A few words on that bifurcation of our roads. Deductive logic is that form of reasoning in which we first present a greater and proven statement, which we call the major premiss. Then follows an endeavour to bring a lesser statement, the minor premiss, into harmony with the greater, and the conclusion inevitably follows. The whole is called a syllogism.

The defect in deductive logic for ordinary purposes is that the main force is spent in proving the major premiss; but in classification the major premiss is already proven, and the worker spends his energies on bringing the minor premiss into harmony with it. The life-work of generations of men has written in indelible lines the characteristics of kingdoms, classes, orders, tribes, genera and species; their locations, needs and functions; the observer is required to shew that the object under examination falls within these lines and the name which forms the conclusion is a record of its attributes.

Classification is not the work of one syllogism; a new procedure is required for each step in the process. There is a major premiss for each new step as we pass into finer detail from kingdoms to classes, orders, tribes, &c., but each involves the complete proof of its predecessor, or the series fails. Such a succession is called a sorites, a plural noun from a Greek word signifying a heap. What a heap of knowledge it signifies. That wealth has come to us from, it may be, millions of observations which record the experience of those whose work is as true to its order, as the flowers which they loved are to theirs. Our work is still in the stage

of observation and experiment, which is always the infancy of experience. By sueh means we bring the present into harmony with the past, and predict the future. Hence the gibe becomes a glory, because we do explain everything when we assign to a natural object its full name in classification. But the road does wind up-hill all the way, and the comfort is that—

"Of labour you shall find the sum."

The junior student finds the mastery of the major premiss hard; what shall I say to the senior? The junior student is satisfied when he makes a harmony in the minor premiss; but is it always harmony. If so, what of evolution?

When Darwin, Wallace, and those who tracked the process of evolution, traced its story, they placed on record facts which they gathered from disharmonies spread over immense periods of time; the survival of the fittest and the disappearance of the less fit were great thoughts born of a vast multitude of historical facts. They reached their theory by a process of inductive logic which is quite the opposite of the logic which we use in classification; it is a building up of the major premiss for service in the future. But in pointing out to us what had occurred in the past, and in impressing on us the large letters in which it was written, they also demonstrated that the same agencies were still at work, and gave us the eyes to see the smaller type in which it is now written. The evolution which is in progress to-day is indicated by trivial disharmonies between our major and and minor premiss in classification. Mr. Marquand, Mr. Luff, Mr. Collenette, Mr. Derrick and Mr. Sharp, to mention only gentlemen who have filled this chair, have formulated for us the flora, the fauna, the meteorology, the geology, and all such features as make the Natural History of the Sarnian group of islands. These same gentlemen, and others who are qualifying to follow in their footsteps, bring before the meetings of this Society new and rare specimens; and surely newness and rarity can mean nothing less than a want of adaptability of the individual to its surroundings—in other words, a disharmony. Harmony with surroundings favours prolific growth; rarity is the indication that the conditions have become uncongenial and that growth is decaying; or that a change in surroundings has made new conditions favourable to an invader. Each addition to our list necessitates an alteration in the major premiss of our classification, for it compels us to add the Sarnian group to the list of its habitations.

It was sufficient in the older time to ascribe the absence of toads and venomous reptiles in Guernsey to a not too well authenticated visit of St. Patrick, and folk-lore has a value even in these days of advanced science; for if the explanation fails to satisfy, the fact of lengthy endurance gives force to the disharmony which we may some day note. There must be an underlying plan which produces the new or rare specimen; the secret of its evolution may carry great influences on the good or evil of the human race, for some disharmonies reap a harvest to our hurt. The student of Natural Science is always a scout in the advanced line who should be able to appreciate the harmony and mark the earliest sign of discord. Fossils and folk-lore were large factors in the problem to which Darwin applied himself; what would he not have given for such records as the *Transactions* of this Society afford? To be useful they must be full and continuous, and we require not only zealous workers but pecuniary support. To the latter end your Council have put before you the need to raise the subscription of individual members; for the encouragement of new workers I have also a plea. We cannot expect them to open the book of Nature at the page of our more advanced readers and be interested, hence the value of our lecturettes. Lists of botanical and zoological names are only a weariness to the junior, however complete; they fail to excite 'that curiosity which is natural to the child and essential to the man of science' (Stevenson). And some element of curiosity is needful to tempt the uninitiated to interest. The harmonies are great and from their very greatness appalling; the disharmonies are minute and present; they might more often form the text of our discourse and whet the appetite for further study. We have had fine examples of this process, but they are too few, and might be increased with advantage to all.

Our *Transactions* should be, and they deserve to be, a local text book; neither trouble nor expense must be stinted to make them a reliable record of the Society's work. But the care of the Society is the education of all willing workers towards a familiar acquaintance with the major premiss; the avoidance of all error in the minor premiss; the strict examination of conclusions with a view to assign a reasonable value to disharmonies, however slight; and the cultivation of such methods of criticism and prophecy as will fit its members to take their place at that table where all men are equal.

BRITISH BATS (CHIROPTERA).

BY MR. GORDON DALGLIESH.

THE habits of Bats are, comparatively speaking, very little known, and for anyone interested in the subject there is a wide field for original observations, and also being one of the most interesting orders of Mammalia, should be studied whenever the opportunity occurs. All Bats are nocturnal, issuing forth from their retreats at sunset to feed. Bats are chiefly insectivorous, all our British species are so, though some kinds, such as the so-called "Flying Foxes" (*Pteropodidæ*) feed on fruit; others again, being carnivorous in their tastes, the Vampires of South America and the Indian *Megaderma lyra*, the latter sometimes making a meal off its smaller relations; and I once had a whole cageful of small birds devoured by this species. During the winter months all our British Bats hibernate and become torpid, occasionally waking up on a mild day to come out and feed. The eyes of Bats for the most part are very small, and in consequence their vision is limited, but their sense of hearing and feeling is very acute. Bats are found all over the globe, being most abundant in warm and Tropical climates. There are 15 species of British Bats; three of these, however, are extremely rare, and have a doubtful claim to rank in our British Fauna.

The Greater Horseshoe Bat (*Rhinolophus ferrum equinum*).—This bat as well as the next species derive both their scientific and popular name from a curious leaf-like process of skin round the nostrils, by means of which they can at once be distinguished from any other British Bat. The nose leaf is regarded as a sensitive organ of perception. The Greater Horseshoe Bat comes out rather early in the evening and flies high. It frequents caves and old houses during the day. When I was in Guernsey I was shown a number of specimens that had been taken from a wine cellar somewhere in the Bordage. Some of these are now in the Guille-Allès Museum. The length of this bat is, head and body 2⅜ inches. Tail 1¼ inch.

The Lesser Horseshoe Bat (*Rhinolophus hipposiderus*).—This Bat can be distinguished from the last by its smaller size, which is only head and body about 1¼ inch. Tail 1⅛ inch. The general colour of the upper parts is "drab," the lower parts "smoke grey." In habits it resembles the last-named species, though it flies higher, and is not so partial to the neighbourhood of trees. It is not so common as *R. ferrum equinum*.

The Long Eared Bat (*Plecotus auritus*).—This Bat is readily distinguished from all other species by the extraordinary length of the ears, which nearly equal the length of head and body. The Long Eared Bat is very common in the south of England, and I know of one specimen that was taken at Cobo, and no doubt will be found to occur all over the Island of Guernsey. It inhabits open country and does not, like some species, resort to the neighbourhood of trees. Its voice is a low squeak, but when frightened is said to utter a "querulous note, like the wailing of a very young child." Its haunts during the day are hollow trees.

The Barbastelle (*Barbastella Barbastellus*).—This Bat, which is rare in the British Isles, was first discovered at Dartford, in Kent. It has also been taken in Warwickshire (where it is said to be not uncommon), Cambridge, Northampton, Norfolk, and Suffolk, and a couple were taken this year in Radnor in June. The fur of this Bat is remarkably soft and glossy, and varies from deep brown to black. Length of head and body about 1¼ of an inch. Tail the same.

The Serotine (*Vespertilio serotinus*).—The Serotine was until quite lately considered a rare species, but as several specimens have been taken chiefly in Kent and the Eastern Counties, it can no longer be considered so. It is never seen on damp or cold evenings, and its favourite haunts are gardens, orchards, and the outskirts of woods. During the day it resorts to hollow trees. The general colour of the fur, which is long and soft, is "dark smoky brown." Length of head and body about 2¾ inches. Tail, 2 inches.

The Noctule or Great Bat (*Pterygistes noctula*).—First noticed as a British species by Gilbert White, of Selborne. The Noctule is the largest of our British Bats (with the exception of *Myotis myotis*), measuring over four inches from tip of nose to end of tail. In England it is chiefly a southern form, being very common in Surrey and Hampshire and the Midland Counties. It ranges in Britain as far north as Lancashire, but has not as yet been recorded from Wales or Scotland. The Noctule makes its appearance very early in the evening and flies very high; it was on account of this that Gilbert White named it "Vespertilio altivolans." Its food consists of moths and beetles. It generally resorts to hollow trees during the day. This year, in July, I took nine Noctules out of a hollow willow tree at Esher, Surrey. These Bats have a very strong and disagreeable odour which is caused by the presence of certain glands in the mouth. The colour of the fur, which is sleek and remarkably glossy, is of a rich chestnut.

The Hairy Armed Bat (*Pterygistes leisleri*).—Closely resembling a small Noctule in general external appearance. The Hairy Armed Bat may be distinguished by its smaller size and the colour of the fur which is dark brown, and also by a band of short hair on the under side of the forearm to the wrist. It is a rare species in the British Isles, though no doubt it is perhaps sometimes mistaken for the Noctule. It has been recorded from Worcester, Gloucester, and Warwick, and there is one specimen from Belfast in the British Museum; but it is fairly common in Ireland.

The Pipistrelle or Common Bat (*Pipistrellus pipistrellus*).—This is by far the commonest of our British Bats, and is to be found all over the British Isles, and in some country lanes on a warm summer's evening they simply swarm. Its food consists of night flying moths and small flies, and it is no uncommon sight to see them

hawking for food during a mild afternoon in winter. Old buildings and under the eaves of houses are the favourite haunts of this Bat, though it frequents the neighbourhood of trees to feed. They may be often attracted by a handkerchief thrown into the air, as I myself have witnessed many a time. It is said to produce but a single young one at a birth. Length of head and body 1¾ of an inch.

Daubenton's Bat (*Myotis daubentoni*).—Daubenton's, or as it is sometimes called, the Water Bat, on account of its partiality for the neighbourhood of water, is a somewhat local species in Britain. It is fairly common in Warwickshire and is found as far north as Banff. The general colour is brown above and dirty white beneath. The face in front of the eyes is partially devoid of hair. The hind feet are rather large. Length of head and body 1 9-10ths; tail 1¾ inch.

Natterer's Bat (*Myotis nattereri*).—This Bat may at once be known by the membrane connecting the hind legs with its posterior margin (known as the interfemoral membrane) being fringed with stiff hairs. The fur is very long and thick, the upper parts being "hair brown," lower parts a dirty white. Length of head and body 1 4-5ths inch; tail the same. Natterer's Bat is another local species, though it is far from rare; it cannot be considered common. It can be readily known on the wing by the light colour of the under fur, which is most conspicuous. It is gregarious in its habits, associating in large numbers in some places. It generally passes away the hours of daylight in roofs, caverns, or church towers.

Bechstein's Bat (*Myotis bechsteini*).—Bechstein's Bat, so far as is known, has only occurred twice in Britain. Two specimens were taken in the New Forest many years ago, and a single example was caught by Mr. J. G. Millais at Henley-on-Thames in 1902. As there is always the chance of its turning up again, I give the following description of it:—

The ears are oval and much longer than the head; the membrane connecting the hind legs being devoid of hair; the upper parts of the body are light reddish brown, the lower parts are greyish white. Length of head and body 2 inches; tail 1·5; forearm 1·55. It is said to be a solitary species, dwelling in hollow trees in the middle of dense woods.

The Mouse-Coloured Bat (*Myotis myotis*).—This is another extremely rare species, its sole claim to rank as British being based on the evidence of some specimens, curiously enough, taken in the grounds of the British Museum, and one specimen taken in Cambridge 15 years ago. This Bat is very common on the Continent and is not unlikely to occur in the Channel Islands. In case this Bat should be taken there I give a description of it, so as to help its captor to identify it:—

Size large; ears large; tips bluntly pointed; extreme tip of tail projecting beyond the edge of the membrane connecting the hind legs. Head and back "hair brown," darker on the shoulders; under parts "smoke grey" with the exception of a line running from the chest nearly to the vent which is white, or greyish white. Length of an adult specimen taken in millimètres: Head and body, 79; tail, 52; H. F. 11; ear, 28; forearm, 65. If any Member of the Society should capture a Bat answering to the above description, he is recommended to preserve the skin and send it to the British Museum for identification.

The Rough-legged Bat (*Myotis dasycneme*).—A single example of this Bat was taken by Lord Lilford on the banks of the Stour,

near Christchurch, Hampshire, in 1853. There is no other British record, and it was no doubt, as has been suggested by many naturalists, accidentally introduced by some ship from the continent of Europe.

The Whiskered Bat (*Myotis mystocinus*).—The Whiskered Bat, though local in England, is by no means rare. It is recorded once from Ireland, but is unknown in Scotland. It is a small Bat not much larger than a Pipistrelle, and derives its name from the presence of a number of hairs on the face, and covering the upper lip. The fur above is long and dark brown, with a reddish tinge. The under parts are grey. It is a solitary species, rarely if ever seen in company with other Bats. It inhabits during the day caves, the roofs of buildings, and hollow trees. It appears early in the evening and flies very swiftly. It produces but a single young one at a birth.

There is one other species that has once been taken in England, namely, **The Parti-coloured Bat** (*Vespertilio discolor*), and its sole claim to rank as British appears to rest on the one specimen which was captured by Dr. W. E. Leach, at Plymouth, and there is no doubt that this Bat was introduced by some ship.

THE EARLY HISTORY AND FIRST SIEGE OF CASTLE CORNET.

BY COLONEL T. W. M. DE GUÉRIN.

PREVIOUS to the loss of Normandy the history of our Guernsey castles is shrouded in obscurity, for although many documents of the 11th and 12th centuries referring to the island have come down to us, they concern for the most part religious bequests to various abbeys; or, as in the case of the great Norman Rolls, of the Exchequer, of Henry II. and Richard I., refer to the revenue of the Crown and not to military defences.

Whilst Normandy and England were united under one Crown, the necessity for strong castles, capable of withstanding a prolonged siege, did not exist, for none of the other neighbouring states were strong enough to attempt to conquer us. The only foes to whom we were exposed at this period were pirates, who might raid the islands, but would not attempt to occupy them. Against such attacks there existed in Guernsey in the 12th century, and probably earlier, at least one castle, or place of refuge, the "Chateau d'Orgueil" or "Chateau des Marais," now most frequently called "Ivy Castle." In the Great Roll of the Norman Exchequer, temp. Richard I., 1195, Robert de Saint Mère Eglise, then fermor of the islands, accounts for certain dues from the tenement of Vaudin in the "Marais d'Orgueil," proving indirectly the castle was already in existence and had given its name to the surrounding marshes. It is possible the Vale Castle was also in existence at this period. It stands on what was once the fief of Ansketil Viscount of Bayeux, which for some unknown reason was confiscated by Duke Robert I. sometime previous to the year 1032, and given by him to the famous abbey of Mont Saint Michel. As the "Chateau des Marais" lies on the other portion of the island held by the Viscounts of the Cotentin, it seems rather probable that both castles may have had their origin in some defences erected by these Barons as

strongholds wherein their tenants could take refuge in time of invasion. But neither were strong enough to withstand a prolonged siege.

After the loss of Normandy the position of our islands lying close to the shores of that province, now occupied by the French, was one of great danger. We learn from the Inquest held before Freshingfield and his fellow Justices, in 1309, that twice during the reign of John, Guernsey had been overrun by the King's enemies, who were expelled therefrom by force. The desire of the French to wrest this last portion of the old duchy out of the possession of England rendered the erection of strong castles a matter of necessity; hence to this period may be ascribed the origin of Castle Cornet.

Of the date of its erection there is no record. In the Close and Patent Rolls of the early years of the reign of Henry III. frequent reference is made to the castles and fortresses in the islands generally, their garrisons, repairs and munitions; but the first mention of the "Castle of Guernsey" is on the 29th October, 1232, when John de Lambersard, the Constable of the castle, is ordered to deliver it up to Philip d'Albigny on his appointment as Warden of the Isles.* Again, on the 8th June, 1238, Henry de Trubleville, Lord of the Isles, dates a letter from the Castle "de Homet," Guernsey;† but it is not until the reign of Edward III. that we find it called Castle Cornet.

The origin of the name Cornet has given rise to much speculation. Opposite to the castle lie the Bordage Cornet and Cornet Street; the former undoubtedly deriving its name from an old Guernsey family, its owners in the 13th century. A recent examination of the Assize Roll of the 32, Edward I., 1304, by Colonel Carey, at the Record Office, London, has brought to light the name of Perrota de Cornet among those of the Bordiers attending these Assizes, held before the Justices, Henry de Guldeford, Reginald de Carteret and John de Ditton. These "Bordages" in the 13th century were hereditary in certain families, whose names in many instances still cling to their ancient possessions. Their owners, styled "Bordiers," held them by certain minor services, of attendance at the three annual Chief Pleas, at Court and at the Assizes, to execute orders of the Bailiffs and Justices, take charge of prisoners to the place of execution, &c. Hence it seems most probable that the small islet on which Castle Cornet stands once formed part of the bordage of the de Cornets, and thus their name became given to the castle.

* Bulletin X., Société Jersiaise, p. 32.

† Dupont, Hist. du Cotentin et ses Iles, vol. II., p. 95.

Very little is known of the history of the castle during the 13th century. We learn that it had been considerably damaged by a great gale early in the year 1252 ;* for on the 21st February the King orders the Warden, Drew de Barentin, to repair "the tower of the king's castle in Guernsey, the chapel and other buildings injured by the wind, as well as the wall of the castle."

Twenty-three years later Edward I., on the 2nd March, 1275, authorizes the levy of certain dues on shipping for three years, if a pier or causeway be built from the shore to the castle, for the protection of shipping.†

Dicey and other writers have supposed that the castle was captured about the year 1294, when the French invaded the island, imagining that this was the occasion referred to in the "Precepte d'Assize," in which it is recorded that Castle Cornet had once been obliged to surrender to the enemy through the fault of its captain, and for want of ammunition, but it was soon after retaken by the valour of the inhabitants of the island. The "Precepte d'Assize" has been supposed to have been drawn up about the year 1331, but Havet, in his "Les Cours Royales des Iles Normandes," clearly proves this date to be erroneous and shows it was not compiled before 1441.‡ Hence it is probable that the capture of the castle by the French in 1338 is the one referred to, especially as no mention is made of its capture in the many documents which have come down to us referring to the invasion of 1294. A vivid picture of the sufferings of the unfortunate people during this invasion—one of the most terrible which the islands endured—is given in a petition to the king, recently published by the Société Jersiaise. We are told the churches were desecrated, the Host being struck down from the altars and spat upon, the images burnt, and holy vessels destroyed or carried away. Women and girls were taken away by force from the Sanctuary ; men and women killed to the number of 1,500, and houses and corn burnt, and everything of value carried off.§

This period was one of the most disastrous in the history of our islands. In the year 1275 Edward I. had given the wardenship of the Isles to his favourite, Otho de Grandison, for the term of his life with the enjoyment of the whole revenue and the disposal thereof for five years after his death.‖ De

* Lettres Closes, published by Société Jersiaise, p. 45.
† Tupper's History of Guernsey, p, 77.
‡ Havet, "Les Cours Royales des Iles Normandes," p. 17.
§ Société Jersiaise, Ancient Petitions, p. 5.
‖ Havet, Serie Chron. des Gardiens et Seigneurs des Iles Normandes.

Grandison was the son of a Baron of Savoy ; he was a famous warrior, Senechal of Gascony, and Minister of the King, and was constantly employed on services of State, or in the wars of Edward I. in Wales and Scotland. Consequently he was too much occupied with other matters to take much heed of the doings of his Lieutenants in the islands, which he visited personally but twice or three times during his long wardenship of 52 years.

These Lieutenants and his other ministers, for the most part foreign adventurers, such as Gerard d'Oroms, Pierre de Garis, Pierre des Balmes, Walter de la Salle, &c., only thought of enriching themselves at the expense of the unfortunate people of the islands whom they oppressed in every imaginable way. The smaller seigneurs were deprived of their privileges. Bailiffs were appointed at one time annually, some of whom refused to take oath to the Jurats to uphold the privileges of the island. Our customs were ignored and the small tenants oppressed, imprisoned and even tortured, until they paid the illegal dues and fines imposed on them.

The castle at this period was the scene of many tragedies. Within its walls was murdered Ranulph Gaultier by Walter de la Salle and his accomplices. We learn from the petition of Ranulph's nephew, Gerard Philippe, to the King, about the year 1318,* that "the ministers of Sir Otes de Grandison, by their great malice, falsely against the Peace of the King, took Renouf Gautier, uncle of the said Gerard, and in the castle of Guernsey imprisoned him by great hatred, and there, by divers manners of torments, killed and feloniously murdered him," and further "nine years have passed without justice being done." For this murder Walter de la Salle was eventually tried before Bailiff Pierre Le Marchant, and executed in the year 1320. His accomplices, William l'Enginour and John Justice fled the island, but were afterwards pardoned by the king.†

Otho de Grandison's long reign of misrule came to an end on his death in 1328, and the king appointed in his place John de Roches as Warden of the Isles, who had previously earned the confidence of the people during the short time he

* Société Jersiaise, Ancient Petitions, p. 28.

† Société Jersiaise, Ancient Petitions, p. 29.

NOTE.—There is no proof of the tradition that Walter de la Salle was Bailiff of Guernsey, but as the list of Bailiffs at this period is still very incomplete, there is a possibility that he may have been. He is styled "Minister of Lord Otho," and "formerly Constable of the Castle," in the many complaints brought against him which figure on the Assize Roll of 1319. His crime and execution are without doubt the origin of the old legend, which, much corrupted with some other tradition, has been handed down to us.

had been Warden in succession to John de Cliveden, when, during the war with France in 1324-5, the king had temporarily deprived Otho of his governorship, on account of his long absence from the islands and his neglect of their defences.

De Roches immediately set himself to the task of restoring the defences of the islands to a state of efficiency and of remedying the grievances of the people. Of his term of office several most interesting records exist, namely, several petitions of the people of the Isles on the state of their defences, de Roches reports to the king in reply to the latter's letters on the same subject, and a valuable collection of accounts. From these we gather that at the end of Otho's governorship the castles were partly in ruins, absolutely denuded of arms and munitions, the small quantity of the former found by de Roches in Castle Cornet being claimed by Sir Gerard d'Oroms, Lieutenant of de Grandison, as his personal property.

The people of the Isles urgently drew the king's attention to the imminent danger of the state of their defences, entreating that—

> "the defects which are or shall be found in the castles . . . be made good and put in a fit state . . . as we are so near the land of Normandy our enemies in time of war may twice a day cross the seas, between us and them," reminding him that, "in the time of Lord Edward your grandfather . . . in default of safe-keeping, the islands were burnt and destroyed and in peril of being lost, and more than 1,500 men were killed by the enemies. And, forasmuch as this is the refuge of your ships of your real power, going towards Gascony and coming back towards England, and they (the islands) lie so near the lands of Normandy and Brittany that there would be danger of their being taken out of your hands; as for a long time the King of France and his people have shown a wish, and still desire to have them in their lordship, whereby it seems to them that they would be lords of the sea; for the which may it please you to command Sir John de Roches, there assigned your keeper, in whom your people have much confidence for the great care he puts in the safe-keeping of your islands and people, and for his great loyalty, to strengthen your castles, and your fortresses of the islands, as well with arms, as with victuals, with repairs of walls, towers and other things suitable to the said custody . . . . and besides there is great need for it, for the pirates of the sea and their other enemies; and especially

a fortress called Gyrbourg, commenced in your said island, for the preservation of your land and people, for in time of war and fear your people cannot take their goods into the ancient castle, enclosed by the sea, suitable and ordained for the port, to defend and guard the port from the enemies."*

This petition dwells on the importance of our islands as a place of refuge for ships going and coming from England and Gascony, and the desire of the King of France to possess them and thus cut the communications between England and her last remaining French province. John de Roches in his report uses almost identical words. He says our islands were "the particular part of the world which they (the French) covet most the dominion, for if they had them they intend to be lords of the sea." Is it not to this value as a port of refuge lying between Gascony and England, that we owe in great measure the favours granted us by the Kings of England and the preservation of our privileges in the 13th, 14th and 15th centuries?

The above-mentioned report of John de Roches is a most interesting account of the state of our islands at the beginning of the 14th century. He informs the king that the inhabitants were humble and well disposed towards the Crown, but they required aid from England, in other words, an English garrison, as the majority were by blood, alliance and relationship, of the people of Normandy, whence great danger might ensue if they were not well governed (bien menetz). The year before his arrival the people had suffered greatly at the hands of both the Normans and English, who carried off their ships and plundered their goods, Alderney being nearly destroyed. In fact, unless the castles were strongly garrisoned it was impossible to hold the islands, as they were constantly exposed to invasion, in peace, as well as in time of war, the danger being greater in time of peace, for there was no peace on the sea. To illustrate these dangers he relates, how, since his arrival, a fleet of Norman ships was seen by the watch at Castle Cornet at daybreak one morning approaching the island, taking with him part of the castle's garrison and the trained men of the island, he went to the place where the enemy usually landed; on finding a force ready to resist them the Norman ships went about and sailed away. In like manner came and went four galleys of the King of France.†

The garrison of Castle Cornet under de Roches consisted of six men at arms and 50 archers. This would appear from

* Société Jersiaise, Ancient Petitions, pp. 47. 48. 49.
† Bulletin XIX., Société Jersiaise, p. 289.

the Accounts of Thomas de Ferrers, ten years later, to be about the usual number employed for its defence. But besides these there was "le power del païs," the trained force of the islanders, who were called upon in emergency to assist in defending the castle and island at their own charge.

The First Siege of Castle Cornet.

The accounts given by our historians of the various invasions of Guernsey by the French during the early years of the reign of Edward III. are rather conflicting.

Hitherto it has generally been supposed that the island was ravaged by the French allies of the Scots in 1336, and again in 1338, by the French Admiral Behuchet, who, on the 8th of September, captured Guernsey and Castle Cornet. The occupation of the island and castle by the French has been supposed to have lasted only a few months, and an Order of the Council in Parliament given at length by both Duncan* and Tupper†, has been considered proof of their expulsion from Castle Cornet previous to the 20th January, 1340‡.

This Order, which is given on the authority of "Bree's Sketch of this Kingdom (England) in the 14th century,"§ runs as follows :—

> "Anno XIII, Edward III, m. 32 (1339 to 1340). Item fait a remembre que Monsieur Thomas de Ferrars ad empris d'envoyer saunz delay un homme suffisant au chastel de Gerneseye pour sursur les defautes de l'etat de meisme le chastel; pur pleinement certifier ent au conseil et en moen temps de trover gages a ceux qui y demeureront en garnisons illecques, tant que la some de cent livres; et le dit Monsieur Thomas ferroit pourvoir tote mancre de morte garnisture pur le dit chastel, disore selon ce est requis par les messages du dit chastel. Et l'Ercevesque Canterburie et le Tresorier sont accordez coment qui serra fait a dit Monsieur Thomas trente tonneaulx de pomadre,‖ cinquante quintals de fer, deux quintals d'acier pour le meisme garniture; et pur ceo que Guillaume Pein un des juretz de l'isle de Gerneseye, est alors contre defens a les enemys, soit brief mande au baillif et jurez de meisme l'isle de eslire un autre suffisant en son lieu et de seisir ses terres bien et chattels en la main le roi a repondre ent les issues. Harl: M.S.S., No. 14, p. 58."

* Duncan, p. 31. † Tupper's History of Guernsey, 2nd edition, p. 94.
‡ Havet gives this date in "Les Cours Royales des Isles Normandes," p. 62.
§ Printed in 1791. ‖ Cider.

Havet, in his History of "Les Cours Royales des Iles Normandes," p. 62, gives word for word, with slight variations of spelling, the latter portion of this Order referring to William Payn, on the authority of the "Rotuli Parliamentorum," Vol. II., p. 109, wherein he is styled "un des Jurez de l'Isle de Gereseye." The following letters from the Close Rolls, referring to the execution of the above-mentioned Order of the Council, prove the accuracy of this version, and show that Bree has made the serious error of substituting Guernsey for Jersey throughout his copy of this Order.† [This has been confirmed by Miss E. F. Carey's recent examination of the copy of this Order in the Harliean MSS., No. 14, p. 58, at the British Museum. See Appendix I.]

February 8, 1340. Westminster.

To the Sheriff of Southampton. Order to cause thirty tuns of cider, 50 quintals of iron and 2 quintals of steel to be bought and purveyed and delivered by indenture to Thomas de Ferrariis, keeper of the isle of Jereseye, or to his attorney, delivering to them a ship for carrying such provisions to that island, at the king's expense, for the munition of the king's castle there, as has been fully enjoined upon Thomas by the council.

By Council in Parliament.*

February 7, 1340. Kennington.

To the Bailiffs and Jurats of the Island of Jerseye. Order to take into the king's hand without delay all the lands, goods and chattels which belonged to William Payn, late one of the jurats of the island, and to cause them to be kept until further orders, electing another jurat in William's place, as the king has learned that he is gone to Normandy and has joined the king's enemies, against the proclamation forbidding anyone to go there or to communicate with the king's enemies in those parts.

By C. in Parliament.†

Further in the Patent Rolls, in the Letter of Protection granted to the people of the Isles on the 1st February, 1340, it is distinctly stated that Guernsey was still occupied by the French.

Having accepted this Order as proof of the expulsion of the French from Castle Cornet in 1339, or early 1340, our historians were brought face to face with a difficulty, as

* Calendar of Close Rolls, 1339-1341, p. 368.
† Calendar of Close Rolls, 1339-1341, p. 359.

it was known as an undeniable fact that the castle was captured from the French in August, 1345, by the Captains of Bayonne in the employ of Edward III. Hence it was supposed that it had been captured a second time by them at some unknown period between these dates. The idea most generally accepted being that this second invasion occurred some time during the wars of the succession of John III., Duke of Brittany, 1341 to 1343.

In recent years many valuable documents have been published by the Record Office, London, the "Société Jersiaise," &c., which have added largely to our knowledge of the history of this period. From these and other sources, it would seem that for the first few years of the reign of Edward III. our islands enjoyed comparative peace; but in the year 1336 the French allies of the Scots swept down upon the Channel burning and ravaging the Southern ports, the Isle of Wight, and Guernsey and Jersey.* In the following year they again invaded the Isles and ravaged Serk and Alderney. This time Guernsey and Jersey seems to have escaped invasion, or possibly repelled the enemy, as the Warden, Thomas de Ferrers, accounts for the receipt of the full revenue from both islands; whilst from Alderney and Serk he received nothing" on account of the invasion of the enemy.†

On the 11th May, 1337, shortly after this invasion, the king wrote to Thomas de Ferrers reciting all that the inhabitants of Serk had recently suffered at the hands of "the adherents of the Scots, his enemies," warning him that he was menaced by similar evils if he did not oppose them energetically. At the same time he orders that all the men of the islands be armed and enrolled in corps of thousands, hundreds and twenties for their defence.‡

In the execution of this order de Ferrers was evidently energetically assisted by the Bailiffs and civil authorities of the Islands, as on the 18th August, 1337, the king, writing to the Bailiff and Jurats of Guernsey, says he has "been pleased to learn that they are active according to their strength in matters touching the honour and safety of the islands, for the which the king thanks them requesting them to repel the king's enemies."§

At the same date the king wrote to de Ferrers, ordering him to cause the castles of "La Cornet and Gurry"‖ to be

* Duncan. Appendix, p. 580, Rot. Scot., 10 Edward III., 3, Fœdera.

† Bull. XVI. Société Jersiaise, 1891, p. 26 and 27, Art. Documents relatifs aux Attaques sur les Iles de la Manche, 1338-1345.

‡ Tupper's History of Guernsey, p. 101 (Pat. Rolls Edward III., p. 1 m. 6 d.)

§ Calendar Close Rolls. 11 Edward III., p. 159.

‖ Gorey Castle.

provided with men-at-arms, archers and other infantry, armour and victuals, because the king has learned that they are in great danger for lack of such provision." Further on the same day he orders, "the tower called 'la Mangonel' in Cornet Castle Gernereye, to be repaired as it is in great danger"; also that "a constable, gatekeeper and munitions be placed in Cherburgh Castle, as the people of Gernereye are in danger of invasion."

On the 21st August, 1337, Parliament was assembled and voted a subsidy for the war—"which Philip de Valois unjustly had declared in sending ships and galleys of war against the kingdom and the isles."* Great preparations were made for the invasion of France in the following Spring, which saw the beginning of the 100 years war.

Early in the spring of 1338 the French commenced hostilities. Nicholas Behuchet invaded Jersey on the 26th March, burning houses and corn and ravaging the island,† which, however, he did not attempt to occupy. He probably invaded Guernsey at the same time, and this is no doubt the invasion referred to by Edward III. in his letter to the King of France, July, 1338‡, wherein he states, that his island of Guernsey had been invaded, the houses and churches burnt, and many of the inhabitants, without respect to sex, killed. The Continuator of Guillaume Nangis writes probably referring to the same occurrence, "the island of Guernsey, with the exception of a castle, was totally destroyed,"§ In September Behuchet again invaded the islands and on the 8th of that month both Castle Cornet and the fort of Jerbourg fell into the hands of the French.‖

The Constable of Castle Cornet at this time was Sir Simon de Goldingham, who had held that post since the 20th June, 1337. Its garrison consisted of 11 men-at-arms and 50 archers. That of Jerbourg was Thomas de Lynedon, who had been appointed Constable by virtue of the King's Writ of the 18th August, 1337, already referred to. Its garrison consisted of only 12 archers.¶ The fate of these garrisons is uncertain. Some escaped to Jersey, including Simon de Goldingham, Thomas de Lynedon, John de la Launde and Henry Power.**

On the 25th October, 1338, Walter de Weston was appointed Lieutenant of the Isles, during the absence of

* Dupont, Vol. II., p. 265. Rymer, II., 3rd part, p. 173.
† Accounts Thos. de Ferrers, Bull. XVI., Société Jersiaise, p. 31.
‡ Dupont, Vol. II., p. 269. Rymer, II, part 4, p. 66.
§ Dupont, Vol. II., p. 268. Con. de G. Nangis, p. 158.
‖ Bull. XVI., Société Jersiaise, p. 27.
¶ Bull. XVI., Société Jersiaise, pp. 29, 30. ** Do., pp. 19, 36, 53.

Thomas de Ferrers with the king in Flanders, and until such time as he should return and resume his governorship.* He was dispatched with reinforcements to Jersey during the month of November following,† and remained in charge of the islands for two years; as on the king's return from Flanders, according to Dupont,‡ de Ferrers was imprisoned and suspended from his office, presumably on some charge connected with his custody of the islands.§

In October, 1338, Philip de Valois gave Guernsey to his son, John Duke of Normandy, who bestowed it during the same month on Robert Bertran, Sire de Bricquebec, the Marshal of France.‖ In a way it was a deed of restitution, for the Marshal was representative of one of the coheiresses of Leticia the Viscountess of the Cotentin, whose ancestor, Neel the Viscount, had held half the island in the reign of William the Conqueror.

The Marshal set about the defence of his new possession, and in January following sent to the "Gardien du Clos des galées," at Rouen, for various munitions for the defenee of the island.¶ On the 12th March, 1339,** in person and accompanied by a great host of men and ships, including 17 Genoese galleys, he invaded Jersey and summoned the castle to surrender under threat of death to all who resisted. The Constable having refused to surrender, Robert Bertran finding the Castle of Mont Orgueil too strong to capture by assault, after burning many houses, during which he lost 40 men by a sortie from the castle, re-embarked his force and returned to Normandy, the Genoese galleys making for Guernsey. A few days later the French fleet of 205 vessels of various sizes returned to the islands, and picking up the Genoese galleys at Guernsey sailed for La Rochelle.

The petition of the people of Jersey to the king, which gives us these details, goes on to entreat him to send to Bayonne for the fleet of that town, that it and the English fleet might fall upon the French ships on their return and capture rich booty. At the same time it urges that a force of 40 ships and 60 to 65 barges be sent by Jersey "to go to the Castle Corneyt of Guernsey, that with the help of God and the counsel of the people of Guernsey, and the good will which the people of Guernsey have towards the King, the castle

* and † Patent Rolls, 12 Edward III.

‡ Dupont, Vol. II., p. 287. Walsingham, p. 147.

§ Patent Rolls, 14 Edward III., June 2nd, 1340. The king pardons Thomas de Ferrers "all accounts, and other actions and trespasses for the time in which he held the custody of the said islands (Jersey, Serk and Alderney) and also the island of Gernereye."

‖ Dupont, Vol. II., p. 270.

¶ Dupont, Vol. II., p. 274. ** Société Jersiaise. Ancient Petitions, pp. 67 and 86.

would be conquered within 2 or 3 days." For as the petitioners pointed out, there were "in the castle or in the land for the King of France but one Knight and 80 men of Normandy."

On the 7th September, 1339, Nicholas Helie, Sergeant-at-Arms of the King of France, was Governor in Guernsey, "au service de Noblehomme et puissant monseigneur le Maréchal Bertran," and requesting the "Gardien du clos des galées" to provide various munitions to Danois de l'Aguillon,* master of a galley, for the defence of the islands. And in further proof of the occupation of Guernsey by the French during the whole of this year, we find on the 10th May, 1339, the king ordering the Treasurer and Barons of the Exchequer to give Thomas de Ferrers respite until the "quinzaine of Michaelmas next for the arrears of his ferm of the islands . . . . . as he has besought the king to cause allowance to be made to him in his ferm . . . . . and certain of the islands are occupied by the king's alien enemies who have invaded them, and Thomas cannot receive the ferm for that cause; and the king wishes to deal favourably with him because he is staying in his service in parts beyond the sea and cannot depart to account for what he has lost."† Also in the Accounts of Walter de Weston, Lieutenant in the Isles, we only find mention of the receipt of the Crown revenue from Jersey for this year, nothing being received from any of the other islands.‡

That Guernsey was still in the possession of the French on the 1st February, 1340, is shown by the following letter in the Patent Rolls§ :—

> "Protection during pleasure for the men of the island of Gernereye, as also for those of the islands of Jereseye, Serk and Aureneye, and their possessions, ships, boats and other things against divers men of the king's realm and power and friendship, who under colour that the island of Gernereye is held by the French enemies, daily contrive divers grievances against the men of the said islands both by land and sea. This protection is not however to extend to any French enemies holding the islands, or passing to or from it.
>
> "By the Keeper and C."

The king appointed John de le Launde Bailiff of Guernsey on the 23rd April, 1340, "in consideration of his great labours and good service to the king in those parts."‖ He had formed one of the garrison of Castle Cornet from 20th June,

* Dupont, Vol. II., p. 286. (Actes Norm., 116 and 117.)
† Calendar, Close Rolls, 1339, p. 221. ‡ Bull., Société Jersiais, XVI., p. 27.
§ Calendar, Patent Rolls, 1340.
‖ Calendar of Patent Rolls, 1340.

1337, to the time of its capture by the French, when he escaped to Jersey. After the invasion of the latter island by Robert Bertran, in March, 1339, he was sent, with other envoys from the islands, to the king to petition for succour. The ship in which they sailed was attacked by the French at sea and partly burnt, and they received from the Exchequer on the 17th October, 1339, £20 as compensation for their loss.* One of the other Guernsey envoys, Henry Power, or Poer, was probably wounded on this occasion, for on the 18th April, 1339, the king requests the Prior of Totness to admit into his Priory "Henry Poer of the island of Gerneseye who has lost his goods and chattels there by the king's alien enemies, and was wounded in the king's service, and to provide him with a suitable maintenance there until the king's return."† This appointment of a Bailiff of Guernsey of itself might lead us to imagine that the French had been expelled from the island by this date. But we have proof that it was not in the custody of Thomas de Ferrers on the 2nd June, 1340, when "having taken upon himself the custody of the castle of Jereseye, and the islands of Jereseye, Serk and Aureneye until the Purification, the king in consideration of that, and of the charge which he has had before in the islands, has pardoned him all accounts, and other actions and trespasses for the time in which he held the custody of the said islands, and also of the island of Gerneseye;"‡ hence in the absence of any record, either in the Accounts of his Lieutenant, Walter de Weston, or elsewhere, of the expulsion of the French from Guernsey subsequent to the 1st February, 1340, or of their recapture of the island between the 23rd April and the 2nd June of the same year, we can therefore only suppose that this appointment was made whilst the island was still occupied by the French as a preliminary to its reconquest later in the year.

On the 20th June, 1340, the famous battle of Sluys was fought, when England absolutely crushed for the time the naval power of France. The king now determined to attempt the reconquest of Guernsey, and on the 3rd August we find letters referring to the force about to be sent to the Isles for this purpose under Thomas de Ferrers.§ Another letter of the 6th of the same month gives fuller details of the object of the expedition. By it the king orders Reymund Seguyn, the king's butler, to deliver ten tuns of wine to "Thomas de

* Bull., Société Jersiaise, XVI., pp. 18-19.
† Calendar, Close Rolls, 1339, p. 107.
‡ Calendar, Patent Rolls, 1340.
§ Calendar, Patent Rolls, 1340, p. 20.

Ferrers, keeper of the islands of Gereseye, Serk and Aureneye, who has set out in the king's service to those islands for their defence against the attacks of the king's enemies, and to besiege the castle of Gerneseye which is held against the king by those enemies."*

Shortly after, on the 25th September, 1340, a truce was agreed upon between England and France, in which a special clause was to the effect that "the sieges of Guerneseye and the Isles will be raised as soon as the truce comes to their knowledge." The king's letter informing the Keeper of the islands of "Jereseye, Serk and Aureneye" of the conclusion of the truce is dated the 6th October.† It was probably a long time reaching its destination, or the truce, like many of its predecessors, may not have been much observed in our islands, for on the 29th of the same month Walter de Weston expelled the French from Guernsey, and they retreated into Castle Cornet,‡ which the force at his disposal was insufficient to capture. The siege of the castle then commenced and lasted, as we shall see, for nearly five years.

That Guernsey was forcibly conquered by the English under de Weston and not peaceably evacuated by the French as a consequence of the truce, as has been imagined by some authors, is clearly shown by the following extracts from the Accounts of Warden, Thomas de Ferrers, viz. :—

> "In payment of the men-at-arms for the safe custody and garrison of the island of Guernsey, from the 29th October, Anno XIV., on which day the island of Guernsey, except the castle, was conquered from the power of the King of France, up to the 19th of March following."§

And again

> "Item received of the goods and tithes of the aliens in the island of Guernsey, Anno XIV., 59 livres 13 sols 4 den. and no more, because the remainder of the tithes and goods of the aliens were destroyed at the time when the said island was conquered from the power of the King of France."‖

On the 20th November, 1340, we find the king granting fresh Letters of Protection to the people of the Isles,¶ "for all the men of the island of Gerneseye, as well as those of the islands of Jereseye, Serk and Aureneye as the king hears that men of his realm and power and friendship under colour that

* Calendar, Close Rolls, 1340, p. 499.
† Calendar, Close Rolls, 1340, p. 637.
‡ Bulletin XVI., Société Jersiaise, p. 38.
§ Bulletin XVI., Société Jersiaise, p. 38. ‖ Do., p. 27.
¶ Calendar, Patent Rolls, 1340.

the former island was lately occupied by his French enemies devise divers grievances against them." The difference between this phrase, "was lately occupied by his French enemies," and that in the former letters of the 1st February, "is held by the French," is further proof that the reconquest of the island had taken place in the interval, and confirms the entries just quoted from the Accounts of de Weston and de Ferrers.

Thomas de Ferrers returned to the islands on the 25th November, 1340, and resumed his governorship.* Guernsey was garrisoned by six men-at-arms and forty archers until the 20th March following, when de Ferrers' term of office expired.† The entry in his Accounts for the payment of these men shows that up to this date the French were still in possession of Castle Cornet, as he states that they were for "the safe custody and garrison of the island of Guernsey;" for when the castle was in his possession, both before its capture by the French in 1338, and after its recapture by the English in 1345, the entries in his Accounts are invariably for the payment of the "garrison at Castle Cornet."

The king appointed Thomas de Hampton as Warden in the place of de Ferrers on the 20th March, 1341,‡ and a few days later, on the 25th, ordered him "to survey the defences of the islands, and inform himself fully on the conduct of the king's affairs there in the time past, and in what manner these can be ordered for the king's best advantage in the future, and to certify the king of the premises with all speed."§ On the 23rd March the king wrote to the people of the Isles that he had "examined their envoys and petitions showing him the state of the islands and the dangers threatening them unless speedy succour be sent, and the customs used and approved among them that they may be preserved entire," and informs them he is sending Thomas de Hampton, as Keeper, to direct the defences of the islands, "and the inhabitants by their advice and assistance."‖

De Hampton proceeded immediately to the islands, the Bailiff of Southampton being ordered on the 25th of March to provide him with a ship for his passage.¶ Having completed his enquiry he returned to England to report to the king, the Treasurers and Barons of the Exchequer being ordered, on the 1st July following, to pay him a mark a day for the time he had spent on his commission.** He then returned to the

* Bulletin XVI., Société Jersiaise, p. 18. † Do., p. 38.
‡ Calendar, Patent Rolls, 15 Edward III. § Calendar, Patent Rolls, 1341, p. 159.
‖ Calendar, Close Rolls, 1341, p. 117. ¶ Calendar, Close Rolls, 1341, p. 37.
** Calendar, Close Rolls, 1341, p. 172.

islands and took over his governorship, for we find the Sheriff of Southampton ordered, on the 13th of the same month, to provide a ship for the passage of de Hampton and his household to the Isles.*

For us the result of this inquiry was of great importance. On the 2nd June, 1341, the king wrote to his Treasurers and Chamberlains that "being desirous for certain reasons, to be certified of the tenor of the complaints made by our men of our islands of Guernsey, Jersey, Serk and Alderney, before our beloved and faithful Robert de Grandeburg (de Scardeburg?) and his companions Justices, lately travelling to those islands, touching certain immunities, liberties and customs of the said isles, and also of the records and processes had, it is said, on the said voyage, between us and the said men, on their complaints; we command you, that after examining the said rolls of the said Robert, regarding the said voyage which are in our treasury, in your charge as it is said, you do make a clear and distinct report to us in our chancery without delay under the seal of our exchequer of all you may find thereof."† On receipt of this report the king, on the 10th July, 1341, at length acceded to the repeated request of the people of the islands, and confirmed to them all their privileges, which had been in abeyance since the time of the Assizes of 1331.‡

This confirmation of our privileges, and a letter of the 27th June, of the same year, ordering the Sheriff of Southampton to "cause oaks fit for timber for the making of engines necessary for the defence of Gernereye and the adjacent islands against the attacks of the king's enemies, to be purchased up to £20 and shipped to Gernereye,"§ show that the island was in the possession of the English; and as extensive repairs were subsequently carried out by de Hampton at Jerbourg Castle, it is evident that it remained so during the whole of the year.

The repairs to Jerbourg Castle having been completed, the king on the 30th January, 1342, ordered that all the men of the islands "in accordance with their quality and the quantity of their goods . . . be assigned certain places in the castle called Gerebrok in the island of Gernereye," for its defence, "as the king has caused the said castle to be repaired at great cost for the safety of the people of the island and their goods."‖ On the same day he also ordered the Warden, Thomas de Hampton, to seize "all lands and goods of traitors

* Calendar, Close Rolls, 1341, p. 256.
† T. F. de H. Constitution of Guernsey, p. 40.
‡ Calendar, Patent Rolls, 1341, p. 237.
§ Calendar, Close Rolls, 1341, p. 179. ‖ Do., 1342, p. 375.

in the islands, as he is informed that divers men having land in the island, have absented themselves in time of war, staying among the king's enemies of France . . . and returning in time of truce and peace."*

In the spring of this year (1342) the Spanish and Genoese allies of Charles de Blois, Don Louis of Spain and Joseph Grimaldi were, according to Froissart, cruising off Guernsey with a fleet of 32 ships and galleys, to intercept the reinforcements which Edward III. was intending to send to Brittany to aid the cause of the Count de Montfort. And as it has been supposed that Guernsey was recaptured about this time by the French, or their Spanish allies, during the wars of the succession of John III., Duke of Brittany, before considering the documents referring to the island it may be advisable to glance briefly at the events which have given rise to this idea.

On the death of John III., Duke of Brittany, in April, 1341, without issue, the dukedom was claimed by Charles de Blois, in right of his wife, the heiress of John's next brother; but his title was disputed by her uncle, the Count de Montfort, John's stepbrother, as heir male. Edward III. with curious inconsistency, considering his own claim to the French Crown, espoused de Montfort's cause. The details of the first campaign of 1341 do not concern us, suffice it that the Count de Montfort was defeated and taken prisoner at Nantes by Charles de Blois. His Countess bravely defended herself in the castle of Hennebont, and being at length succoured by an English force under Sir Walter de Mauny, she sought refuge in England. In the spring of 1342, Edward III. determined to send a force to Brittany to aid the cause of the de Montforts which, according to Froissart, assembled at Southampton about Easter, under the command of the Earls of Pembroke, Northampton, Salisbury, &c., but was delayed from sailing by contrary winds. At length, the Countess, accompanied by Robert d'Artois and the above-named Earls, set sail, and off Guernsey fell in with the fleet of Don Louis of Spain and the Genoese. The English fleet consisted of 46 ships, but although more numerous than their opponents, the latter had nine vessels of greater size than any of the English. Towards evening the fleets engaged in battle, and after a very fierce conflict at close quarters, during which the Countess de Montfort fought like a man among the knights, for Froissart relates, she had a "lion heart," night fell and ended the battle. Both fleets anchored, intending to renew the conflict next day, but during the night a terrific storm arose, "as though the

* Calendar, Close Rolls, 1342, p. 375.
Froissart's Chronicles, Lord Berners' trans., Vol. I. pp. 182, 195, 211 and 213.

world appeared to be ending." The English fleet weighed anchor and made for the nearest port, arriving at a small place near Vannes. Don Louis managed to capture two ships laden with stores before making for the open sea, and being driven before the wind for three days, during which he lost three ships with all hands, found himself off the coast of Navarre. [A copy of a curious illustration of this battle off Guernsey taken from an ancient manuscript of Froissart's Chronicles in the Bibliothèque National, Paris, was recently presented by the Rev. Bourde de la Rogerie to the Guille-Allès Library.]

The Close Rolls for 1342 enable us to arrive within a few days of the exact date on which this battle was fought. On the 3rd August the English fleet had not yet sailed, for on that day the king issued an order to the Collectors and Receivers of Wool to deliver certain quantities of this article to the Earl of Salisbury, "about to set out to Brittany on the king's service."* Another letter in the Patent Rolls of the 10th May, 1343, mentions that Robert d'Artois was besieging the town of Morlaix, "on Tuesday before the 29th August last," namely, on the 27th August, 1342. This fixes the date of the battle off Guernsey between the 3rd and 27th August, 1342, or about three months later than Froissart infers.

The fact of the Countess de Montfort's force being attacked when off Guernsey by Don Louis of Spain, as well as the knowledge that Castle Cornet was still occupied by the French in the year following, 1343, has given rise to the impression that they had recaptured the island and castle, and that it was being used by Don Louis as the base of the operations of his fleet.† But according to ample evidence now at our disposal, we can show, that with the exception of Castle Cornet, which still remained in the possession of the French, Guernsey was in the hands of the English during the whole of the year 1342, thus proving the idea that it had been recaptured by the French, erroneous.

The letter of the 30th January, 1342, referring to Jerbourg Castle, has already been quoted, which proves the island was in the possession of England at that date. Further, on the 27th July of the same year, the king orders the Warden to take into the king's hands the revenue of the church of "St. Mary de Castello in the island of Gernereye, until William de Gaillard be instituted parson thereof."‡

NOTE.—Similar orders appear in these Rolls for all the various Barons mentioned by Froissart as taking part in this expedition, beginning with one for Robert d'Artois dated the 3rd July, 1342. By another of the 26th of the same month, Robert d'Artois was still "about to set out to Brittany on the king's service."

* Calendar, Close Rolls, 1341—1343, p. 573.

† See Dupont, Vol. II., p. 306. Also Tupper, Chronicle of Castle Cornet, pp. 10 to 15.

‡ Calendar of Close Rolls, 1342, p. 466.

But of much greater importance than these are the Accounts of the Warden, Thomas de Hampton, of which unfortunately all that remain concerning Guernsey are those from the 20th June to the 29th September, 1342.* They contain long lists of payments of the wages of the men engaged in besieging Castle Cornet. Also those of 31 seamen employed in a barge, watching round the castle from the 1st August to the 29th September, to prevent supplies being brought to the garrison from Normandy.* These prove that during the month of August, and thus at the date of the naval battle off Guernsey, the castle was very closely beleaguered. Hence it is probable that the Countess de Montfort and her force touched at Guernsey, and after leaving the island,—which is the natural translation of Froissart's expression "au departement de l'île de Guernesey"† fell in with the fleet of Don Louis in all probability at some distance from our shores.

The lists of names of the men employed at this period in the siege of Castle Cornet are of interest as they show the force contained a considerable contingent of Jerseymen. Among whom were John and Guilbert des Augrées, Guilbert Lemprière, Guilbert Dumaresq, Walter de la Hougue, William Payn, Thomas Hascoil and many others.‡ This no doubt is the origin of Falle's very exaggerated version of the part played by Jersey in the recapture of the castle.

We also find the names of many Guernseymen taking part in the siege, among whom were Nicholas Cokerel, Robert Blondel, Nicholas and Peter Vivemer, Peter Russel, John Cokerel, John, William and Robert de la Court, Nicholas Guille and others. The 31 seamen employed watching the castle in a barge were nearly all Guernseymen, namely, William Guillot, John Belet, Ralph du Vivier, Robert Gouye, Richard de la Court, John Ollivier, Richard de la Launde, Ralph and Jordan Choffyn, &c.‡

For the next few months the Rolls are chiefly occupied with the affairs of Jersey. The oppressions of Thomas de Hampton and of his Lieutenant, Henry de la More, had created great discontent in that island, and the people of Jersey petitioned the king for protection.§ On the 14th March, 1343,‖ William de Chesney, John de Tamworth and John de Hungerford were appointed as Commissioners to

* Bull. XVI., Société Jersiaise, Accounts Thos. de Hampton, pp. 39-42.
† See Dupont, Vol. II., p. 306.
‡ Bull. XVI., Société Jersiaise, pp. 39 to 42.
§ Société Jersiaise, Ancient Petitions, pp. 74 and 75.
‖ Calendar Patent Rolls, 1343, p. 83.

investigate the truth of the charges brought against the Governor and his Lieutenant. At the same time they were directed to report on the state of the king's castles and fortresses in all the islands, and particularly on the strength of their garrisons, which the king was informed were too large for a time of truce. These Commissioners left England on the 31st March, and took 68 days to investigate the various charges of their commission, returning to England on the 6th June.* As a result of their report Thomas de Hampton was dismissed and Walter de Weston appointed Warden in his place on the 25th June.† It is doubtful whether de Weston ever took over the governorship of the Isles, as he was replaced by Thomas de Ferrers on the 14th July following,‡ who was then appointed Warden for the second time for a term of five years.

Early in the spring of this year (1343), shortly after the proclamation of truce between England and France, a ship called *La Katherine*, belonging to Richard de Port (du Port?), John Fevere and other merchants of Guernsey, went to Bordeaux and was there laden with wine.§ On her return voyage to Guernsey she was attacked off the town of Olonne in La Vendee, by ships of Saint Malo and captured. The Guernsey merchants laid complaint to the king and prayed for redress. Edward III. wrote on the 8th June to the Bishop of Saint Malo, setting forth the complaint made to him of the doings of the latter's subjects, and demanding restitution of both ship and cargo.‖ The Guernsey merchants then sued in the Bishop's Courts for restitution, but obtained no redress. Thereupon "John Estur supplying the place of John de la Launde, Bailiff of Gernereye," in other words the Lieutenant-Bailiff, wrote to the king setting forth the position of affairs. On this report the king ordered the Warden, Thomas de Ferrers, on the 8th August, "to arrest all goods and merchandise of men and merchants of the Bishop of Saint Malo, in the islands, to the value of £250 and costs."¶ This matter, though otherwise of small interest, proves the island to have been in the possession of England at this time.

But in proof of the French occupation of Castle Cornet at the same period we find that on the 29th June in the same year,** Adam de Routichan, the Governor of the castle, under the Marshal Bertran, dispatched Adam Charles, Sergeant

* Calendar of Close Rolls, 1343, p. 161.
† Calendar of Patent Rolls, 1343, p. 104. ‡ Do., p. 107.
§ Société Jersiaise, Ancient Petitions, p. 72.
‖ Calendar of Close Rolls, 1343, p. 116.
¶ Calendar of Close Rolls, 1343, p. 159.
** Dupont, II., p. 296. Act. Norm. II., pp. 164 and 165.

of the King of France, to Normandy to request supplies and munitions for the garrison. The ship in which the latter sailed was wrecked and he lost all his belongings. On the 28th July, 1343, Philip de Valois, by Letters Patent addressed to the Bailiff of the Cotentin, granted to Adam Charles, "son sergent au chastel de Cornet," an indemnity of 30 *livres* worth of wood in the forest of Brix, as he had lost, "en la mer toutes ses armeures par ce que la nef ou il estoit pery et enfondra."

For the next two years, though many letters appear in the Close and Patent Rolls referring to the Channel Islands as a whole, or with a few exceptions to various appointments, &c., in Jersey, they do not afford any information as to the condition of Guernsey during this period. This absence of any direct reference to our island cannot be considered evidence of its recapture by the French. The fact of Thomas de Ferrers holding the post of Warden during the whole of this time in itself precludes such an assumption; for it is most improbable, if he had again lost the island during his second term of office, that he would have been permitted to retain his post.

We now come to the closing scenes of the French occupation of Castle Cornet. From a fragment of a "Chronicle de Flandre, relatifs a Godefroi de Harcourt" given by Delisle, in his "Histoire des Sires de Saint Sauveur le Vicomte," we gather that about the year 1345, Maran le Marronier, captured six English ships off Guernsey, putting to death all on board. When news of this atrocity reached Edward III. he dispatched Godfrey d'Harcourt and Reginald de Cobham, his Marshal, with 10,000 men to expel the French from Castle Cornet. The castle was bravely defended by Nicholas Elleyes (or Helie), the Captain and the French garrison of 500 men, but after three days' assault it was taken, Nicholas Helie and his whole force being slain.* This account, though probably correct in its principal facts, is undoubtedly very untrustworthy as regards the numbers employed on both sides.

The Accounts of Thomas de Ferrers, which begin on the 3rd June, 1345,† add many interesting facts to our knowledge of this period. They show that the condition of affairs in the island previous to the capture of the castle was identical with that existing in 1342 and 1343. The island was held by the English, whilst the French still occupied Castle Cornet, in which they were closely besieged.

* De Lisle. Histoire des Sires de St. Sauveur le V. preuves, pp. 91-92.

† Bulletin XVI., Société Jersiaise, pp. 47-53.

On the 3rd June Thomas de Ferrers returned to the island with reinforcements, and letters under the Privy Seal to treat with the French Knights in the castle. A few days later he was joined by Sir William de Gruyssy and Sir Roland de Verdon, who were accompanied by six esquires and eight valets. An unsuccessful attempt was made at this time to engage the services of the Genoese, but the messengers sent to Brittany for this purpose were taken prisoners. The negotiations with the French Knights evidently proceeded for some weeks, for on several occasions we find record of payments to divers valets sent to Normandy to ascertain news and the wishes of the friends of the Knights.* The result was unsatisfactory, so, on the 30th June, Sir Roland and one valet returned to England, and about the same time Philip Barton and Nicholas de Gruyssy were also sent to report to the king at Sandwich,* where the army for Guienne was being assembled under the Earl of Derby. As the king left Sandwich for Flanders on the 3rd July,† it is doubtful whether he received de Ferrers' report until his return on the 26th of the same month.‡ This report referred without doubt to the failure of de Ferrers' negotiations with the French Knights in Castle Cornet, and also to the impossibility of his capturing the castle with the force at his disposal. The king, therefore, entrusted the difficult task to the Captains of five vessels of Bayonne and "others his faithful subjects." A warrant of the 5th August§ gives the names of the ships and the commanders, Peter Bernard, of the *La Katherine*, Peter de Benessa, of the *La Dieu la Garde*, Raymond des Vaux, of the *La Nave Dieu*, Arnold de Caressa, of the *St. Mary*, and Peter Darby, of the *St. Peter*. The first-mentioned, Peter Bernard, of Toulouse, was a famous freebooter who figures often on the Rolls of this period.‖ In command of the expedition was Sir Godfrey d'Harcourt, who, accompanied by a personal following of five Knights and 24 men-at-arms, arrived in Guernsey with his force on the 13th August.¶

In the interval Thomas de Ferrers was closely besieging the castle, and from the 2nd July to the time of the arrival of d'Harcourt's force, 30 archers were employed in boats watching round the castle to prevent supplies being brought to the garrison. Arms and munitions had been brought from England, and scaling ladders, &c., prepared for the final assault on the castle.**

* Bulletin, XVI., Société Jersiaise, pp. 47, 53. † Calendar, Patent Rolls, p. 517.
‡ Calendar, Close Rolls, p. 639. § Tupper Chronicle, Castle Cornet, p. 12.
‖ Calendar, Close Rolls, 1343 to 1346.
¶ and ** Bulletin, XVI., Société Jersiaise, pp. 47 to 53.

If the Chronicle of Flanders is to be trusted, the final assault and capture of Castle Cornet took place on the third day after the arrival of Godfray d'Harcourt, or about the 16th or 17th August, 1345.

The castle remained in the possession of the Captains of Bayonne, who, on the 28th August, were ordered by the king to deliver it up to Thomas de Ferrers and return home.* From de Ferrers' Accounts, it would seem that it had been handed over to him three days previous to the said letter, for he paid the garrison from the 25th of the month.†

Godfrey d'Harcourt remained in Guernsey until the 19th November following, but in what capacity we cannot tell. It is a curious coincidence that this famous Norman exile should have been instrumental in depriving his own bitterest enemy, the Marshal Bertran, of the last vestige of his possession of Guernsey.

Falle, in his history of Jersey, dwells largely on the important part played by the people of that island in the recapture of Castle Cornet. It is therefore of interest to note from the Accounts of Thomas de Ferrers the true version of the matter. Among the archers employed in the siege, from the 26th June to the date of the capture of the castle, are the following Jersey names: William Lempriere, Nicholas Botiler (Le Boutellier), Philip de la Hougue, William Arthur, Collas Mallet, Richard Petit, and possibly William Katherine. These are very few compared with the numbers of Jerseymen who figure on the Rolls of men employed earlier in the siege of the castle, in 1342. Further, it is very doubtful whether any beyond these took part in the capture of the castle, as serving out of their own island they would also have received payment, and consequently have appeared in these Accounts.

Very few Guernseymen are mentioned as taking part in the final siege of the castle, for as they were bound to serve for the defence of their island at their own cost, only the names of those receiving payment for special service, or who were serving in the garrison of the island, would appear in these Accounts. These were John du Gaillard, one of the men-at-arms, and among the archers Philip de la Marche, Richard atte Wiche (de Vic), John Port (du Port) and Adam Guille. The 30 seamen and archers watching round the castle were nearly all Guernseymen, viz. :—John Austyn, John Lapostoil, John Russell, Oliver Bonard, John Dere, Stephen Columbye, Ralph Choffyn, Jordon Choffyn, Collas

* Tupper Chronicle, Castle Cornet, p. 317.

† Bulletin, Société Jersiaise, XVI., p. 49.

Pymard, John Pikard, Janin Dere, John Roker, Robert du Val, Perot Sampson, Guille Bogre, Richard de Vesclus, John Dynis, Robert Bernard, Perot Vyvier, Philip Godel, John Druys, Dynis de Lescluse, John Marrynde, Peter Columleye, Peter Bakeys, Peter Lysard, Richard du Pount, Robert Bernard, Ralph Sardyng and Peter Royman.

In conclusion, the evidence now at our disposal may be briefly summarised as proving that the French held both the island and Castle Cornet from the 8th September, 1338, to the 29th October, 1340, just over two years. The island was then recaptured by Walter de Weston, and henceforth remained continuously in the possession of England. The siege of Castle Cornet, into which the French retreated, lasted from the 29th October, 1340, until the middle of August, 1345, thus nearly five years elapsed before it was recaptured by the English. When we remember that Sir Thomas Osborne held out in Castle Cornet for nearly nine years against the Parliamentarians the length of this earlier siege can hardly be a matter for surprise. True, the defences of the castle had been greatly improved in the reign of Queen Elizabeth, but in the interval the use of gunpowder had vastly increased the offensive power of a besieging force. Sufficient of the original castle of the time of Edward III. remains to shew its strength, and surrounded by the sea, except for a few hours a day at spring tides, it was almost impregnable before the days of gunpowder. It may surprise us that the English fleet made no attempt to recapture Castle Cornet during the wars in Brittany; but a study of the events of that period shows that it could not have been well spared for the length of time required for such a purpose, as during the first campaigns in Brittany the cause of the de Montforts was well-nigh desperate and required immediate assistance. Further, the fleet was wanted off the Morbihan to protect the English base at Vannes, for we know that during the expedition in 1342-3, led by Edward III. in person, at one time, during the absence of a portion of the fleet, the position of his force was most critical, as Don Louis of Spain cut the king's communications with England, and attacking the remainder of his fleet in the Morbihan burnt several of his ships. Again after the truce of 1343, the employment of the fleet to recapture the castle would have undoubtedly led to the immediate renewal of hostilities, an event for which Edward III. was not at that time prepared. Therefore it was only after hostilities again broke out in Guienne, in 1345, that the enterprise was successfully carried out by Godfrey d'Harcourt and the

Captains of Bayonne, previous to the departure of the Earl of Derby's expedition to that province.

APPENDIX I.

I am indebted to the kindness of Miss E. F. Carey, of Le Vallon, for the following exact copy of the Order of Parliament of the 20th January, 1340, referred to on page 344, which she has transcribed from the Harliean MSS., No. 14, pp. 58-59, at the British Museum. Although this is the reference given by Brec in his "History of this Kingdom (England) in the 14th Century" it will be seen by comparison with his version, that he has not only incorrectly substituted Guernsey for Jersey throughout, as has been shown, but has also made many other errors and omissions.

"Rotuli Parliamentorum."

"Anno XIII, Edward III., No. 32. De Isle de Gereseye.

"Item ffait a remembrer qe Monsor Thomas de fferrers ad empris d envoier sanz delay un homme suffisant au chastel de Jersuy pur surueer les defautes et lestat de meisme le chastel pur pleynement certifier ent au counseil et en moen temps de trouer gages a ceux qy demouront en garnisson illocqes, tanz a la somme de *Mille Livre*. Et le dit Monsr Thomas fera puruoor tote manere de garnisture pur le dit chastel, desore[1] selon ce q*ue* requis est par les messages du dit chastel; et l'erevesq*ue* de Canterbiri*e* et le Tresorer sont accordez coment quee serra fait aut dit Monsr Thomas de quant qil ens fera puruoor pur la salut garde dicel. Et sur le brief soit mande a Wiscont de Seutht (de Southampton) de liuerer al Attornez le dit Monsr Thomas XXX. tonolz de pomadre, L quintals de fer II. quintals d'acier pur meisme la garnisture. Et pur ceo q*ue* William Payn un des jurez de l Isle de Jereseye est alors contre defens a les enemys soit brief mande as Bailiff et jurez de meisme L isle de eslire un autre suffisant en son lieu et de seiser ses terres biens et chateux en la mayn le Roi a respoundre ent des Issues."

(1) Desoremes = Désormais.

APPENDIX II.

I am also indebted to Miss Carey for the following extracts from the "Rotuli Parliamentorum," pp. 47 and 49, Harliean MSS., No. 14, which throw some light on the cause of the long delay which occurred, after the capture of Guernsey by

the French, in September 1338, before Edward III. attempted its reconquest. This, as will be seen, was due to the disorganised state of the English Navy.

"Les Remembrances du Parlement tenuz à Westmonstre à la 15me de la Seint Michel l'an du Reigne de Nre Seigneur le Roi 13me [Ao Ed: III, 13, 1339].

P. 47 . . . "Item. Pur ceo qe pur defaute dune Nauie sur mere aunt An à cest seison, la Nauie de ffraunce a defaite moult des maux par meer et par terre et conquis Lisle de Gerneseie a grant esclaundre de tote la terre; ffait a penser et ordiner coment len pout destreindre la Nauie de ffraunce et regainer ces qest perdu, et portant serroit la Commune descharger de garde de la Meer; et vient consideration q'ils tretont de ces point par un adarrez[1] de Nauie de Engleterre à ces faire si les gents souffrent de bons Volontes.

Les respoune per la Commune as Articles avant dites.

P. 49 . . . De la Nauie.

Item. Pur la meschief qest venus à la Nauie d Engleterre por la reson que les Seignrs des a souns Niefs et Mestres et Mariniers de mesmes les Niefs ount endoiez, ou menez lour Niefs sur meer hors de la flote et compagnies des autres Niefs pur quere marchandizes et pur couetise de gaignier, queles Niefs ount este pris par les enemys nostre seignr le Roi sur meer et les gentz trouez en ycieles tuez et mourdres en esclaundre nostre Seignr le Roi et de tut son Roialme et en amounsement de la flote de sa Nauie; si est acordez et assenties en plein parlement que tote la nauie demouryr et soyt arestez tanq autrement ent soit ordoner.

ADDITIONS TO THE FLORA OF HERM.

BY MR. E. D. MARQUAND, A.L.S.

In the early part of this year, through the most kind favour and influence of his Highness Prince Blücher, I received from the Westbank-Liegnitz, of Vierraden, who are the owners of Herm, permission to visit and stay in that island whenever I chose during the spring and summer, in order to further investigate its fauna and flora. This was a very special privilege and favour, for which I desire to record my most grateful obligations. I have also to return my best thanks to Mr. Leicester Gore, the Manager of Herm, who afforded me every facility for pursuing my researches without restraint in all parts of the island.

Although of diminutive size, this little island of Herm teems with animal and vegetable life of all kinds, besides being extremely picturesque; far more so than would be imagined by persons who do not go beyond the great centre of attraction—the shell beach. The wonderful richness of this famous beach is well known, but many persons seem to be under the impression that nothing but *dead* shells are to be found here. As a matter of fact, however, the shores of Herm far surpass any other locality in the Channel Islands in the variety and rarity of the living mollusca they produce; indeed, it may be questioned whether there is another spot in the whole of the United Kingdom that equals Herm in that respect.

It is not my intention to say anything just now concerning the shells, or other sections of marine life; and the insects will shortly be dealt with in an exhaustive paper by Mr. Luff. But I have collected some additional notes of considerable interest on the botany of Herm, which throw a great deal of fresh light upon the general flora of the Channel Islands as a group.

It may be remembered that in my "Flora of Guernsey and the Lesser Channel Islands," published a few years ago, I enumerated all the Flowering Plants, Ferns, and Fern-

allies then known to be indigenous to Herm, numbering altogether 256 species. Three plants were subsequently added by Mr. Derrick; but it was my belief that the list could still be increased by systematic research. This conjecture has been sufficiently verified, seeing that, during the visits I am about to describe, no less than 46 additions have been made; and I am convinced, from indications which have come under my notice, that yet other species remain to be discovered, especially during the late summer and autumn. But even as it is, the flora of Herm is now known to be a very rich and varied one, comprising, as it does, the large number of 305 flowering plants and ferns, all of them growing wild on a small islet only a mile and a half long, and less than a mile across its widest part.

The more thoroughly we investigate the fauna and flora of these Sarnian islands, taking them as separate and independent areas, the more apparent becomes the fact that they differ from each other in a truly surprising degree. Therefore it is of the utmost importance that the lists of species belonging to each island, and more particularly the lists of insects and plants, should be kept quite distinct from each other, and the distribution and relative frequency of each species carefully and accurately noted. At the present time it is not possible to explain satisfactorily why there should be these peculiar insular differences, or how they have arisen, but they add very materially to the interest and pleasure of the observant naturalist, and some day the riddle will be solved.

Altogether I spent several weeks in Herm, in company with my wife and my little boy, and we made all possible use of our time. Our two first visits extended from the 31st of March to the 7th of April, and after a fortnight's interval, again from the 20th to the 27th of April. This was a good season of the year for the early spring flowers, and we discovered fifteen unrecorded species, besides four ferns.

As nothing whatever was known about the bryology of the island, we devoted a good deal of time and attention to the subject, and had the satisfaction of collecting sixty-three Mosses and twelve Hepaticæ. I spent much time in a fruitless search for several species which are common enough in similar localities both in Guernsey and Alderney, but in Herm they appear to be absent. By way of compensation, however, I was fortunate in findiug three mosses which have not yet been seen elsewhere in the Sarnian Islands,

and consequently they are new to our area, viz., *Dicranella varia*, *Funaria fascicularis*, and *Bryum intermedium*. A curious instance of restricted distribution which came under my observation is sufficiently interesting to be worth putting on record. There is a very common moss (*Funaria hygrometrica*) which is quite as abundant on the cliffs and moorlands of Guernsey and Alderney as it is in England, and I fully expected to find it equally plentiful in Herm. But in spite of a most diligent search, not a scrap of this moss could I detect anywhere, except in one spot, and that was on the small islet of Plat Houmet, where it was fruiting in profusion.

The discovery of an exceedingly rare lichen—one of the greatest rarities of the British flora—was quite an unexpected pleasure. In sauntering through a field at the top of the island, I noticed that the branches of some ash trees were sprinkled with brownish-black dots; and on closer inspection these proved to be *Myriangium Duriæi*, an old acquaintance of mine, which I used to find occasionally in Cornwall twenty years ago. This small, inconspicuous lichen was first added to the British list nearly sixty years ago, from specimens gathered in Sark by the Rev. Thomas Salwey, an eminent lichenologist. Knowing that, I have always kept a sharp look-out on ash trees both in Guernsey and Alderney, but I never met with *Myriangium* anywhere in these islands until I saw it in Herm.

Our next visit to the little island was on the 25th of May, and we stayed there until the 4th of June. Insect-hunting and shell-collecting occupied nearly all our time; but we managed to add to the previous list twenty-two new flowering plants and one fern.

The vegetation of small outlying islets and rocks has always possessed a peculiar interest for me, and I seldom miss an opportunity of examining and cataloguing the plants which compose it. An exceptionally low tide at the end of May gave me a chance to walk across to the green islet which is known to the Herm people by the name of Plowmey, evidently a corruption of its proper name, Plat Houmet, as given on the map. It lies about a quarter of a mile from the shore, off the north-western point of Herm; and from a rough measurement I made, its extent would be approximately 70 to 80 yards long, and 15 to 20 yards wide. The top is level, and abundantly covered with vegetation. The following is a list of all the flowering plants I could find growing on this islet:—

Cochlearea danica.	Armeria maritima.
Silene maritima.	Plantago coronopus.
Sagina ciliata.	Beta maritima.
Cerastium triviale.	Rumex acetosella.
C. tetrandrum.	Poa pratensis.
Lepigonum rupestre.	Sclerochloa loliacea.
Trifolium repens.	Dactylis glomerata.
Lotus corniculatus.	Festuca rubra.
Solanum dulcamara.	

Now, it is extremely interesting as well as instructive to compare this list with two others which have been compiled for somewhat similar islets in our area. One of these islets, called Houmet Homptolle, is situated just off the north-eastern extremity of Guernsey, and measures about 80 yards long by 60 yards wide; that is to say, more than double the size of Plat Houmet. But it possesses fewer plants, and a different flora, as will be seen on referring to my *Flora of Guernsey*, p. 475, where a list of the plants of Homptolle is given. The other is the comparatively large and barren islet of Burhou, situated almost in mid-channel, between Alderney and the Casquet Rocks. Although Burhou is very many times the size of Plat Houmet, being nearly three-quarters of a mile in length, its flora is inferior, and considering its area, remarkably small. In each case the plants have been exhaustively catalogued, and the numbers are as follows:—

Plat Houmet	17 species.
Burhou	16 species (and 2 ferns).
Houmet Homptolle	15 species.

Only three plants are common to all the three islets; four species are found on both Plat Houmet and Burhou; three on both Burhou and Homptolle; and nine on both Homptolle and Plat Houmet. A very remarkable peculiarity which Plat Houmet shares with Burhou is that the Compositæ (the Order which includes the largest number of British plants) are not represented at all.

On the 8th of August we again crossed over to Herm, this time on a three days' visit. Many of the small cliff plants were unfortunately dried up beyond recognition; consequently only three novelties were found. The most interesting of these was the rare leek *Allium Ampeloprasum*, which (as a true native) is peculiar to Guernsey. In Herm it grows plentifully amongst a dense growth of brambles and bracken on the hillside above the houses, and the tall flower-heads were very conspicuous in the month of June. I feel certain, however, that this fine species is a comparatively

recent introduction, because such a strikingly noticeable plant could not possibly have escaped the observation of all the botanists who have visited Herm during the last twenty or thirty years. But how it got there is a puzzle; perhaps it may have been cultivated somewhere for culinary purposes; or, might some of the head-bulbils have been brought over by birds from its Guernsey station at Fort George? At any rate *Allium Ampeloprasum* is now firmly established in Herm, and will doubtless spread.

Many of the wild plants are much more common here than in any of the larger Sarnian islands, and although none are peculiar to Herm, two species (*Silene nutans* and *Picris hieracioides*) are not found at all in Guernsey, though they grow in Alderney. It may be interesting for future study to preserve a few particulars taken from my note-book, on the relative frequency of some of the more uncommon species which have already been recorded for Herm, but without sufficient details of distribution.

Ranunculus parviflorus. Occurs in many places; sometimes abundantly. More common in Herm than anywhere else in our area.

Thlaspi arvense. In profusion in cultivated fields at the top of the island.

Silene nutans. More or less abundant all over the cliffs, and also at Moncue. This plant is decidedly the most interesting phanerogam in the Herm flora, as its headquarters are in this little island; the only other place in our area in which it occurs is Alderney, where it grows in two or three localities. In Guernsey it is unknown.

Scleranthus annuus. Very rare; in a dry field near the Mansion. This is also a very rare species in Guernsey and Alderney; more common in Sark.

Medicago lupulina and **M. maculata.** In view of the absence in Sark of both these generally common plants, it is worth noting that in Herm they are as plentiful as usual.

Arthrolobium ebracteatum. Abundant in the large quarry at Moncue, and on a dry bank at the upper end of a field near there; also occurs in good quantity on one part of the east cliffs.

Prunus spinosa. Very abundant, growing in extensive patches both in the interior and on the cliffs. These dense blackthorn copses afford good shelter and excellent hiding places for the Kangaroos, which have now become quite naturalised in Herm. There are at present, it is said, about forty of these animals in the island, and one man told me he has seen as many as eighteen at a time.

Poterium sanguisorba. Plentiful on the Common.

Saxifraga tridactylites. On the Common, here and there.

Bupleurum aristatum. Abundant on the eastern side of the Common.

Smyrnium Olusatrum. A very plentiful roadside and hedge plant, especially in the interior.

Galium mollugo. As common as in Guernsey. This is worth noting, as it is very rare in Alderney.

Dipsacus sylvestris. Generally distributed throughout the island.

Hieracium Pilosella. The type occurs on the Common towards the shell beach. Babington records the var. *Peleterianum* for Herm, but I did not meet with it.

Calluna vulgaris. We looked in vain for this plant (Heather), so if it occurs at all it must be exceedingly rare. This is remarkable, as it is a common species in Guernsey, Alderney and Sark. The common Heath (*Erica cinerea*) is, as usual, abundant.

Cynoglossum officinale. Grows in profusion by the Sailors' Grave, and along the road to the water tanks; also on many parts of the Common and at Rosière.

Scrophularia scorodonia. Frequent in all parts. Very fine in Belvoir Valley, where one tall plant which I measured had a stem seven feet six inches high.

Veronica chamædrys. Very common; more so, I think, than in any of the other islands. Many plants bearing pure white flowers were growing with the typical form in the valley above the houses, and I saw in other parts of the island specimens with mauve coloured flowers, which were very conspicuous among the blue ones.

Nepeta glechoma. Common in all parts. Plants with pale rose-pink flowers occur in good quantity at the top of the island, and less plentifully at Rosière.

Primula vulgaris. In profusion everywhere, making a glorious show on the cliff sides in April. I do not remember ever seeing Primroses so abundant anywhere as they are in Herm.

Anagallis cærulea. One plant which was growing in sandy ground on the Common had beautiful deep blue flowers, but the petals were distinctly ciliated. (See remarks on this species, *Flora of Guernsey*, p. 153.)

Iris fœtidissima. Common in all parts of the island. Much more plentiful in Herm than in Guernsey or Alderney.

Juncus acutus. A few clumps on the north-western shore, and also on the cliffs facing Crevichon.

Carex præcox. Generally distributed and frequent.

C. muricata. Occurs in many places, occasionally growing very luxuriantly.

Dactylis glomerata. Probably the most abundant of all the Herm grasses.

Chara vulgaris. Very fine in two of the water tanks near the Common. This plant is quite as plentiful now as it was when I first found it fifteen years ago, although the tanks are cleaned out from time to time.

Including the plants enumerated in the following pages, the total recorded flora of Herm is now as follows :—

Flowering Plants	292	species.
Ferns and Fern-allies	13	,,
Mosses	63	,,
Hepaticae	12	,,
Lichens	44	,,

There is still plenty of good work to be done among the Lichens, for they are very incompletely represented in the lists. In the course of my rambles I noticed many common species which are not recorded, but as my hands were full of other work they were not noted.

The seaweeds also are another section of the flora of Herm which in all probability would yield extremely rich results if properly studied. Nothing whatever is known about them at present; but to work them up at all satisfactorily, so as to produce a fairly representative list, would require at least several months' residence in the island.

FLOWERING PLANTS (additional).

Ranunculus trichophyllus, *Chaix.* Abundant in the small pool on the Common.

R. hederaceus, *L.* Marshy spot by a streamlet on the east cliffs, plentifully.

R. hirsutus, *Curt.* Frequent in fields at the higher part of the island.

Nasturtium officinale, *R. Br.* Streamlet on the east cliffs. Spring above the Creux. Pool on the Common.

Lepidium Smithii, *Hook.* In several places in the old quarries at Moncue.

Senebiera didyma, *Pers.* One plant on the roadside at Moncue. Very rare in Herm.

Sagina ciliata, *Fr.* On the east cliffs, and on the islet of Plat Houmet.

S. maritima, *Don.* At the foot of the cliffs on the east side of the island.

Acer pseudoplatanus, *L.* Several Sycamore trees occur on the border of a field near the Mansion.

Trifolium incarnatum, *L.* A few scattered plants on the moor at the south of the island. At present there is no sign of this clover having been cultivated here.

T. subterraneum, *L.* In several places on the cliffs, and at Moncue

T. suffocatum, *L.* On the cliffs near the Creux. Top of the hill overlooking the shell beach.

Falcatula ornithopodioides, *Bab.* Moncue Quarry. Cliffs near the Copper Mine.

Vicia angustifolia, *Roth.* Generally distributed and rather common.

Lathyrus latifolius, *L.* A small patch on the cliffs at Rosière, close to the Cottage, probably planted.

Agrimonia odorata, *Mill.* Belvoir Bay, two or three plants. Also a few in the valley above the houses.

Potentilla anserina, *L.* On the Common, close to the small pool.

Cratægus oxyacantha, *L.* Occurs in many places, but only one or two trees or large bushes in each spot. Some appear to be very old.

Montia fontana, *L.* In a dry field near the Mansion. Hilltop above the shell beach.

Tillæa muscosa, *L.* Rather common all over the cliffs in the southern half of the island, and at Moncue.

Apium nodiflorum, *Reich.* Marshy spot in a field between the houses and Moncue.

Centranthus ruber, *DC.* On the wall of the Mansion garden, with white flowers.

Valerianella olitoria, *Mœnch.* Rare; roadside near the water tanks, and in Moncue quarry, in both cases sparingly.

Filago minima, *Fr.* Hillside above Moncue quarry, in good quantity.

Hypochœris glabra, *L.* In several localities on the cliffs; also at Rosière and Moncue.

Fraxinus excelsior, *L.* There is a row of ash trees, mostly of good size, bordering one of the fields at the top of the island.

Myosotis collina, *Hoffm.* Plentiful on the cliffs and on the Common, also at Moncue. I saw a few roots of the white flowered variety (var. *Lebelii*) near Moncue quarry.

Verbascum thapsus, *L.* One plant in flower near the houses. Very rare in Herm.

Scrophularia aquatica, *L.* Marshy spot in a field between the houses and Moncue.

Veronica Buxbaumii, *L.* A few scattered plants seen in different places, but on the whole a rare species.

Salix cinerea, *L.* Two large trees in the valley at Moncue.

Populus nigra, *L.* Several large trees on the hillside below the Mansion, and some young ones in Belvoir Valley.

P. alba, *L.* A few large trees on the hillside below the Mansion.

Allium Ampeloprasum, *L.* Established on the hillside near the houses, growing in considerable quantity among brambles and bracken. Mr. Arthur Bennett, to whom I sent specimens, says (*in lit.* 13 Aug., 1904): "Your interesting *Allium* must, I think, be referred to *A. Ampeloprasum*, L. var. B. *bulbiferum*, Syme, although it is not quite that, insomuch as the head-bulbils are more numerous than usual, and larger. It certainly differs from the type by the head-bulbils, and from *A. Babingtonii* by the *smaller* size of the head-bulbils and the *larger* heads of flowers and bulbs combined." In a subsequent letter (Aug. 18) Mr. Bennett says: "I see that Lloyd, *Fl. de l'Ouest de la France*, ed. 4, p. 360 (1886) has a var. *B. bulbilliferum*. Of course, Syme's name antedates this, but the description better applies to your plant than Syme's does. Syme says: "bulbils few." This certainly is not the case with the Herm plant; they are in a compact head."

Juncus capitatus, *Weig.* In several localities on the south and east cliffs; also at Moncue quarry.

Arum maculatum, *L.* Abundant in the blackthorn copse at Moncue.

Zostera marina, *L.* Common on the sandy shores. The var. *angustifolia* is abundant on the western side of the island at low water mark.

Scirpus setaceus, *L.* Marshy spot in a field between the houses and Moncue.

Carex glauca, *Scop.* Scattered patches on the eastern side of the Common.

Mibora minima, *Desv.* Locally plentiful on the eastern side of the Common.

Sclerochloa rigida, *Link.* A very curious little form of this species, not much more than an inch in height, grows on the Common in one place towards the Obelisk. Mr. Arthur Bennett, who examined specimens I sent him, says, "It is about the size of the var. *B. glaucescens*, but that is described as *grey-green*, which your specimens hardly are."

FERNS (additional).

Polypodium vulgare, *L.* Rare. Two roots on a bank facing the sea at Moncue. Sparingly on the sea-cliff at Rosière.

Lastrea Filix-mas, *Presl.* Rare. Several roots in the old quarry at Rosière. One small plant on a wall at Belvoir House. A few large ones in the old mine shaft between the Creux and Belvoir.

Polystichum angulare, *Newm.* Very rare. One fine root with large fronds was growing luxuriantly in a certain out of the way spot, which I think it wiser not to specify.

Asplenium trichomanes, *L.* Very rare. Four small roots on one of the walls of the Mansion garden.

Asplenium ruta-muraria, *L.* Very rare. With the last species; also four roots.

MOSSES.

Catharinea undulata, *Web. & Mohr.* Moor above the old Copper Mine.

Polytrichun nanum, *Neck.* Cliffs above Belvoir Bay and towards the shell beach. Moor above the Copper Mine.

P. piliferum, *Schreb.* Common on the cliffs opposite Jethou.

P. juniperinum, *Willd.* Very common on dry banks and cliffs.

Pleuridium subulatum, *Rab.* Frequent in all parts.

Ceratodon purpureus, *Brid.* Common.

Dicranella heteromalla, *Schp.* Cliffs above Belvoir Bay and towards the shell beach. Road to Creux.

D. varia, *Schp.* Fallow field near the Round Tower. On the ground in the Mansion Garden This species is new to the Sarnian Islands.

Campylopus fragilis, *B. & S.* Cliffs above Belvoir Bay.

Dicranum scoparium, *Hedw.* Frequent on the Common and cliffs.

Fissidens bryoides, *Hedw.* Rosière cliffs. Road up to the Mansion.

F. adiantoides, *Hedw.* Wet place on the Common, in fruit.

F. decipiens, *De Not.* On the Common in several places.

Grimmia maritima, *Turn.* In rock crevices at high water mark near the shell beach.

G. pulvinata, *Sm.* On stones in Moncue quarry.

G. trichophylla, *Grev.* Common on the cliffs, on rocks, and boulders.

Ptychomitrium polyphyllum, *Furn.* In fruit on rocks above the Copper Mine and also in Moncue quarry.

Pottia Heimii, *Furn.* Sea bank near the shell beach.

P. truncatula, *Lindb.* Eastern cliffs. Fallow field by the Round Tower.

P. intermedia, *Furn.* Belvoir Bay. Moncue quarry. Seabank near shell beach. Road up to Mansion.

P. Starkeana, *C.M.* On sea banks on the north-west coast, and near the shell beach.

Tortula muralis, *Hedw.* Common on walls and stones.

T. lævipila, *Schwgr.* On trees east of the Round Tower.

T. ruraliformis, *Dix.* Abundant on the Common.

Barbula tophacea, *Mitt.* Dripping cliff at Rosière.

B. convoluta, *Hedw.* Roadside near the Mansion. Bank near the Harbour.

B. unguiculata, *Hedw.* On the sea bank in several places. On the ground in the Mansion gardens.

Weisia viridula, *Hedw.* Frequent on the cliffs and on dry banks.

Trichostomum mutabile, *Bruch.* Moncue quarry. Road up to the Mansion. Hill above shell beach. On rocks on the north-west coast.

T. littorale, *Mitt.* Walls of Mansion garden. Wall in Belvoir Valley. Cliff path, western side of the island.

T. flavo-virens, *Bruch.* Frequent on the Common. Belvoir Bay. Sea bank near the shell beach.

Pleurochæte squarrosa, *Lindb.* On the Common in several places. Banks by Moncue quarry.

Zygodon viridissimus, *Brown.* On trees in the Mansion gardens.

Ulota phyllantha, *Brid.* On trees, Mansion gardens.

Orthotrichum diaphanum, *Schrad.* Plentiful on stones and trees in the Mansion gardens.

Funaria fascicularis. In abundance in one part of a fallow field near the Round Tower. New to the Sarnian Islands.

F. hygrometrica, *Sibth.* Several patches in fruit on the islet of Plat Houmet. Not seen on the main island of Herm.

Bryum cæspiticium, *L.* On the east cliffs.

B. capillare, *L.* Common.

B. intermedium. In a wet place on the Common. This species is new to the Sarnian Islands.

B. atropurpureum, *W. & M.* On a boulder near the Mansion.

B. murale, *Wils.* Wall by the Vinery. Wall in Belvoir Valley.

B. argenteum, *L.* Roadside to Moncue, on boulders. On the ground in a pathway near the Round Tower.

Mnium rostratum, *Schrad.* On the cliffs at Belvoir, and near the shell beach. On the Common, and the hilltop overlooking it. A rare moss in our islands.

M. hornum, *L.* Cliff towards shell beach. Hillside near the houses. Bank near Moncue. This usually common species is rather rare in Herm.

Thuidium tamariscinum, *B. & S.* Very rare. On the cliffs above Belvoir Bay, sparingly.

Pleuropus sericeus, *Dix.* Frequent on rocks and boulders.

Camptothecium lutescens, *B. & S.* Plentiful on many parts of the Common and in Moncue quarry.

Brachythecium albicans, *B. & S.* On several parts of the Common.

B. rutabulum, *B. & S.* Common.

B. illecebrum, *De Not.* Frequent on the cliffs and also in the old quarries at Moncue and Rosière.

B. purum, *Dix.* Common everywhere. After *H. cupressiforme* this is the most abundant of pleurocarpous mosses in Herm.

Eurhynchium speciosum, *Schp.* Sparingly on a dripping cliff in Belvoir Bay.

E. prælongum, *B. & S.* Common.

E. myosuroides, *Schp.* On rocks on the east cliffs and near the shell beach.

E. circinatum, *B. & S.* On the Common, growing in sandy ground.

E. striatum, *B. & S.* On the cliffs at Belvoir and near the shell beach; also on the Common. Roadside up to the Mansion.

E. rusciforme, *Milde.* Dripping cliff in Belvoir Bay.

E. confertum, *Milde.* Frequent on rocks and boulders.

Amblystegium serpens, *B. & S.* On the ground, Mansion Gardens.

Hypnum cupressiforme, *L.* Very common, probably the most plentiful of all mosses in Herm.

H. resupinatum, *Wils.* Common on rocks, boulders and tree trunks.

H. cuspidatum, *L.* In wet places on the common.

HEPATICÆ.

Lunularia vulgaris, *Mich.* In the grounds of the Mansion, and on the road leading up to it.

Riccia glauca, *L.* In a fallow field by the Round Tower; Belvoir Cliffs.

Frullania dilatata, *Dum.* Common on trees, walls and rocks.

Frullania Tamarisci, *Dum.* Here and there all along the east cliffs, on rocks and banks. Var. *cornubica*, Carr. Leaves apiculate. Cliffs towards the shell beach.

Lejeunia minutissima, *Sm.* Plentiful on trees and stones in the Mansion gardens. On a boulder near the Vinery.

Cephalozia divaricata, *Sm.* On the hill-top overlooking the shell beach.

Lophocolea bidentata, *L.* East and west cliffs. Mansion gardens. Moncue quarry.

L. heterophylla, *Schrad.* Mansion gardens, on the ground.

Kantia Trichomanis, *L.* On the road up to the Mansion. Cliffs towards the shell beach.

Fossombronia pusilla, *Nees.* In the quarry at Rosière.

Metzgeria furcata, *Dum.* On trees in the Mansion gardens. On rocks near Belvoir, and towards the shell beach.

Anthoceros lævis, *Dill.* Bank of field towards Moncue. Roadside up to the Mansion. Cliffs south of Belvoir.

THE INSECTS OF HERM.

BY MR. W. A. LUFF, F.E.S.

THE island of Herm lies about three miles from the east coast of Guernsey and forms the central portion of a formidable group of islands and rocks running nearly parallel with it; the whole from the Amfroque to the Ferrière rocks being nearly six miles in length. The Channel between these and Guernsey is called the Little Russel and in the narrowest part, opposite the Vale Castle, there are only seven fathoms of water. Herm is of an irregular oval shape measuring about 1½ miles from North to South and is rather more than half a mile across. It has high and precipitous cliffs on the southern and eastern sides, whilst the northern and western parts are much lower. At the north is a sandy common somewhat similar to L'Ancresse Common in Guernsey. The central table land is cultivated, but the slopes, particularly near the sea and the common, are still wild and covered with a profusion of vegetation.

On June 15th, 1889, an excursion was made to this charming little island by our Society, and the plants and insects collected on that occasion are duly recorded in the *Transactions*. I have visited the island several times and collected a few insects on each occasion, but it remained for Mr. E. D. Marquand to supply the greater portion of the material for the following list.

Mr. Marquand, with the able assistance of his wife and son, assiduously collected the insects of Herm whilst residing there at various times during the months of April, May, June and August of this year.

The island, notwithstanding its small extent, turns out to be unexpectedly rich in insect life, no less than 374 species being recorded.

The Lepidoptera, as might be expected on such a wind-swept island, are not very numerous. Among the butterflies it is interesting to find *Pararge ægeria* (the

speckled wood) so abundant. Although a common species, it is usually associated with wooded districts. In a note published in the "Entomologist's Monthly Magazine," the late Mr. R. McLachlan, F.R.S., noticing the abundance of this species in Guernsey, suggests that at one time these islands were much more thickly wooded than at present. The Small Heath butterfly, *C. pamphilus*, is also abundant, although it has only been once observed in Guernsey.

During the Society's excursion to the island on June 15th, 1889, I found five nearly full-grown larvæ of *Malacosoma neustria*, the Lackey Moth, all feeding on bramble leaves. They must have been abundant as the remains of their webs were to be seen on the bramble bushes in different parts of the island. Mr. Marquand found numbers of the larvæ again this year. One specimen only of this moth has been taken in Guernsey.

The form of *Zygæna trifolii*, the 5-spot Burnet moth, found in Herm, is somewhat different to that occurring on the Guernsey and Sark cliffs. The latter form occurs in June and the former in late July and August. Mr. J. W. Tutt, F.E.S., has named this variety sub-species *palustris*. A precisely similar variety is to be found at the same period of year on the marshes by the seaside at Cancale and the Isles Chaussey between Granville and Cancale. On August 11th, 1874, I bred a specimen, from a pupa found in Herm, still bearing the head of the larva, with not a trace of the antennæ of the perfect insect. This is a very rare form of monstrosity.

The Coleoptera, or beetles, number 133 species, almost as many as are recorded for the much larger island of Alderney. The non-British *Cetonia morio* is not uncommon and the beautiful rose chaffer *Cetonia aurata* has been taken, but is not nearly so common as in Sark. Mr. Marquand found three specimens of the pretty little *Chrysomela polita*, a species not yet recorded for Guernsey. In an interesting little book entitled "Rambles in the Channel Islands by a Naturalist," a letter from Dr. F. C. Lukis to William Yarrell, the celebrated naturalist, is quoted, in which the writer states that he has found that rare beetle *Nebria Complanata* in Herm, but has never seen it in Guernsey. This species has not been found by Mr. Marquand or myself, but being such a local insect it may still exist in some unexplored spot in the island.

Fifty species of the Aculeate-Hymenoptera (ants, bees and wasps) have been taken. Twelve of these have not

been recorded for Guernsey and three have not been taken elsewhere in the Channel Islands. These latter are *Odynerus parietinus*, Linn. *Andrena Rosæ* variety *Spinigera*, Kirby and *Andrena apicata*, Smith. The last mentioned species is very rare in England. A female of *Andrena angustior* is a curious variety, with a black face ; this Mr. E. Saunders says is very interesting.

"Apis mellifica in the island of Herm," was the title of an interesting note published by Mr. Marquand in the "Entomologist's Monthly Magazine" for November. It appears that no trace of the common hive bee was seen by Mr. Marquand up to June 4th. On his next visit, August 8th, however, they were observed in different parts of the island, but not nearly so numerous as in other places when Hive Bees occur. So far as is known no one has ever kept bees in the island.*

It is conjectured that those seen in August may have formed part of a swarm which had flown over from Guernsey. It is well known that bees fly long distances. In Le Lievre's Guide to Guernsey, published in 1863, Dr. F. C. Lukis in an article on the Conchology and Entomology of these islands, says "Butterflies, Bees, Ants, &c., cross the sea from shore to shore. We have met the humble bee attracted or guided more by scent than sight, humming his drowsy song between the islands at least ten miles from the nearest land."

Thirteen species of *Ichneumonidæ* have been captured ; of these, eight are not on the Guernsey or Alderney lists.

The most interesting species is *Hepiopelmus variegatorius*, Panz. This handsome insect is one of the rarest of the British ichneumons, there being only two or three records of its capture. One of these is by Mr. E. D. Marquand at Land's End in Cornwall in 1884.

The Neuroptera are represented by five species, two of them being very minute. The absence of ponds or streams will sufficiently account for the scarcity of this order.

It is in the order *Hemiptera* that the greatest prize occurs. Towards the end of May Mr. Marquand captured a small dark species, with very prominent eyes. The exact locality was not noted at the time, but it was most likely found under a stone on the sandy common at the north end of the island. Not finding it described or figured in "The Hemiptera-Heteroptera of the British Islands," I

* Since the above was written I have ascertained that Bees were kept in Herm by Mr. Job Henry about 50 years ago.

sent it to Mr. Edward Saunders who named it *Leptopus boopis*, Fourc. He says it is a very interesting capture as it does not occur anywhere else nearly so far north as Herm. Another great rarity is *Brachysteles parvicornis*, Costa, of which Mr. Marquand took one specimen. There are two records only of its capture in England. Among the *Diptera*, the handsome *Anthrax paniscus* and both varieties of the bee-like *Volucella bombylans* are the most interesting species.

The following 72 insects mentioned on the list have not been recorded for Guernsey :—

LEPIDOPTERA.

Zygæna trifolii, sub-species *Palustris*.
Blabophanes rusticella, *H. B.*
Tischeria marginea, *Haw.*
Elachista atricomella, *Sta.*

HEMIPTERA.

Leptopus boopis, *Fourc.*
Brachysteles parvicornis, *Costa.*
Pediopsis tibialis, *Scott.*
P. scutellatus, *Boh.*
Typhlocyba quercus, *Fab.*

COLEOPTERA.

Nebria complanata, *L.*
Amara continua, *Thoms.*
Cercyon littoralis.
Aleochara lata, *Grav.*
A. lanuginosa, *Grav.*
Homolata xanthopus, *Thoms.*
Cafuis sericeus, *Holme.*
Oxyteles mixtus.
Philorhinum humile, *Er.*
Anisotoma calcarata, *Er.*
Meligethes distinctus, *W. C.*
Corylophus sublævipennis, *Duv.*
Epuræa æstiva, *L.*
Antherophagus silaceus, *Herbst.*
Aphodius scybalarius, *F.*
Cetonia aurata, *L.*
Chrysomela polita, *L.*
Apteropeda graminis, *toch.*
Psylliodes atricilla, *Panz.*
Anthicus schaumi, *Woll.*
Apion affine, *Kirby.*

HYMENOPTERA.

Odynerus parietinus, *Linn.*
Halictus nitidusculus, *Kirb.*
Andrena pilipes, *Fab.*
A. Rosæ var. Spinigera, *Kirb.*
A. apicata, *Smith.*
A. nigriceps, *Kirb.*
A. albicrus, *Kirb.*
A. nana, *Kirb.*
A. Wilkella, *Kirb.*
A. lapponica, *Smith.*
Podalirius quadrimaculatus, *Panz.*
Bombyx Derhamellus, *Kirb.*
Hepiopelmus variegatorius, *Panz.*
Diadromus trogladytes, *Grav.*
Campoplex, *Sp. ?*
Cryptus peregrinator, *Gr.*
Pezomachus analis, *Fst.*
Pimpla flavonotata, *Holmgr.*
P. graminellæ, *Gr.*
P. examinator, *Gr.*
P. turionellæ, *Gr.*
? P. ornata, *Grav.*
Tenthredopsis coqueberti, *Kl.*
Athalia spinarum, *Fab.*
Strongylogaster cingulatus, *Fab.*
Hoptocampa cratægi, *Klug.*
H. alpina.
Kaliosysphinga ulmi.

DIPTERA.

Bibio laniger, *Mg.*	Syrphus nitidicollis, *Mg.*
Thereva nobilitata, *F.*	Dolichopus æneus, *Deg.*
Tachista arrogans, *L.*	Hercostomus gracilis, *Stan.*
Eumerus strigatus.	Ophyra leucostoma, *W.*
Thryptocera bicolor, *Mg.*	Dicranomyia dumetorum.
Orgyma luctuosum, *Mg.*	Cælopa parvula, *Hal.*
Opomyza germinationis, *L.*	Sepsus violacea.

In conclusion, I have great pleasure in acknowledging the kind assistance rendered in the determination of species by the Rev. E. N. Bloomfield, M.A., F.E.S; Mr. Edward Saunders, F.R.S., &c.; Rev. F. D. Morice, M.A., F.E.S.; Mr. C. G. Barrett, F.E.S; Mr. G. C. Champion, F.Z.S.; Mr. Claude Morley, F.E.S; Mr. E. A. Butler, B.A., F.E.S., and Mr. E. A. Elliott, F.E.S.

LIST OF HERM INSECTS.

LEPIDOPTERA.

RHOPALOCERA (Butterflies).

PIERIDÆ.

Pieris rapæ, *L.* Common.

P. napi, *L.* Two specimens, 1904.

Gonopteryx rhamni, *L.* One fine perfect specimen seen by Mr. Marquand.

NYMPHALIDÆ.

Vanessa urticæ, *L.* Not uncommon.

V. io, *L.* One specimen captured, 1904.

V. atalanta, *L.* Two captured, August, 1874, W. A. L. Several seen and captured, June and August, 1904, E. D. M.

V. cardui, *L.* One very fine specimen seen, August, 1904.

SATYRIDÆ.

Pararge egeria, *L.* Abundant.

P. megæra, *L.* Not uncommon. Four specimens taken by Mr. Marquand, three with extra eye spots on upper wings.

Salyrus semele, *L.* Two specimens July, 1872, W. A. L.; one, June, 1904. E. D. M.

Epinephele janira, *L.* Common, females brightly marked.

E. tithonus, *L.* Abundant.

Cœnonympha pamphilus, *L.* Very abundant, although one specimen only has been taken in Guernsey.

LYCÆNIDÆ.

Polyommatus phlæas, *L.* Several taken July, 1872, W. A. L.; one, August, 1904, E. D. M.

Lycæna ægon, *Schiff.* One specimen, 1904.

L. icarus, *Rott.* Very common.

L. argiolus, *L.* Noticed by Mr. F. W. Hawes on June 18th, 1887. See *The Entomologist* for February, 1888.

HETEROCERA (Moths).

Macroglossa stellatarum, *L.* One specimen captured.

Zygæna trifolii, sub-species **palustris.** Common in July and August at the north end of the island.

Nola confusalis, *H. S.* One specimen.

Euchelia jacobææ, *L.* Abundant.

Callimorpha hera, *L.* One specimen seen by Mr. Marquand; the type form with red underwings.

Arctia caja, *L.* Larvæ common. One specimen of the perfect insect taken.

Arctia villica, *L.* Three larvæ taken.

Spilosoma lubricipeda, *Esp.* Not uncommon.

S. menthastri, *Esp.* Two larvæ taken.

Porthesia similis. Found one larva, July 9th, 1903.

Bombyx neustria, *L.* Common. Five full-grown larvæ taken June 15th, 1889, W. A. L.; a number of small larvæ taken May, 1904, E. D. M.

B. quercus, *L.* Larvæ not uncommon, May and June, 1904.

B. trifolii, *Esp.* Larvæ taken July 9th, 1903, W. A. L.; also in June, 1904, E. D. M.

Miana strigilis, *Clerck.* Not uncommon.

M. fasciuncula, *Haw.* Common.

Caradrina superstes. One specimen, June, 1904.

Agrotis puta, *Hb.* One specimen.

Agrotis exclamationis, *L.* One specimen.

Triphæna comes, *Hb.* One specimen.

T. pronuba, *L.* One, July, 1903.

Phlogophora meticulosa, *L.* One, July 9th, 1903.

Plusia gamma. *L.* Abundant.

Xylophasia polyodon, *L. D. S.* Not uncommon.

Euplexia lucipara, *L.* Two, July 9th, 1903.

Hypena proboscidalis, *L.* Common.

Rumia cratægata, *L.* Common.

Boarmia gemmaria, *Brahm.* One specimen captured, one bred from a larva.

Aspilates ochrearia, *Rossi.* Not uncommon.

Abraxas grassulariata, *L.* Abundant.

Emmelesia decolorata, *H. B.* Two, July, 1874.

Melanippe fluctuata, *L.* One.

Coremia ferrugata, *Clerck L.* One July, 1903.

Camptogramma bilineata, *L.* Abundant.

Cidaria dotata, *L.* One bred from a larva taken in May.

Herbula cespitalis, *Schiff.* Common.

Nomophila noctuella, *Schiff.* Very abundant.

Pyrausta purpuralis, *L.* One, July 9th, 1903.

Edotricha flammealis, *Schiff.* Common.

Scopula prunalis, *Schiff.* Common.

Scoparia dubitalis, *H. B.* One, July, 1903.

Botys ruralis, *Scop.* Abundant.

Aciptilia pentadactyla, *H. B.* One.

Alucita hexadactyla, *L.* Not uncommon.
Crambus culmellus, *L.* Two, June, 1904.
C. hortuellus, *H. B.* Common.
Penthina cynosbana, *H. B.* Several, 1904.
Pardia tripunctana, *W. V.* One, July, 1872.
Aspis udmannia, *L.* Larvæ not uncommon.
Catoptria ulicetana, *Haw.* Common.
Eupæcilia maculosana, *Haw.* Two specimens, 1904.
Luffia lapidella, *Tutt.* One larva found by Mr. Marquand.
Tinea ferruginella, *H. B.* Two, June 15, 1889.
Plutella cruciferarum, *Zell.* Common.
Blabophanes rusticella, *H. B.* One, August, 1904.
Depressaria badiella, *H. B.* Several specimens, June 15th, 1889.
D. heracleana, *De Geer.* Abundant.
Chelaria hubnerella, *Don.* One.
Dasycera sulphurella, *Fb.* Not uncommon.
Glyphiteryx fischeriella, *Zell.* One, June, 1904.
Tischerea marginea, *Haw.* One.
Elachista atricomella, *Sta.* One.

HEMIPTERA-HETEROPTERA.

Sehirus bicolor, *Lin.* One specimen, May, 1904.
Piezodorus lituratus, *Fab.* Not uncommon on the cliffs.
Brachypelta aterrima, *Foerst.* This non-British species is common.
Stenocephalus agilis, *Scop.* Common.
Lygæus punctato-guttatus, *Fab.* Not uncommon, but local.
Ischnorhynchus geminatus, *Fieb.* Common among heather.
Ischnocoris angustalus, *Boh.* One, August, 1904.
Pyrrhocoris apterus, *Linn.* One specimen captured by the late Francis Walker, F.L.S., on June 13th, 1860.
Leptopus boopis, *Fourc.* One specimen of this non-British species taken by Mr. Marquand, May, 1904.
Monanthia cardui, *Lin.* Very common.
Dictyonota crassicornis, *Fall.* Several taken from under stones on the common, June 15, 1889.
Anthocoris sylvestris, *Linn.* Common.
Triphleps minutus, *Lin.* Abundant.
Brachysteles parvicornis, *Costa.* One specimen of this little rarity taken by Mr. Marquand.
Miris lævigatus, *Linn.* Very abundant.
Lygus pratensis, *Fab.* Common.
L. pabulinus, *Linn.* Two, 1904.
L. pastinacæ, *Fall.* One, May, 1904.
Calicoris bipunctatus, *Fab.* One, June 15, 1889.
Heterotoma merioptera, *Scop.* Not uncommon.
Corixa Geoffroyi, *Leach.* Common in water tank, 1904.
C. atomaria, *Illig.* Several specimens captured in water tank.
Notonecta glauca, *Linn.* Common in water tank.

HEMIPTERA-HOMOPTERA.

Aphropora alni, *Fall.* One.
Philænus spumarius, *Lin.* Abundant.
Pediopsis tibialis, *Scott.* One.
P. scutellatus, *Boh.* One.
Evacauthus interruptus, *Lin.* Common.
Chlorita flavescens, *Fab.* Common.
Typhlocyba quercus, *Fab.* Common.

COCCIDÆ.

Ripersia Tomlinii, *Newstead.* Several taken June 15th, 1889.

NEUROPTERA.

PSEUDO-NEUROPTERA.

Psocus variegatus, *Fab.* Several.
Cæcilus flavidus, *Steph.* Common.
Cloëon dipterum, *L.* One found dead in a water tank.

NEUROPTERA-PLANIPENNIA.

Micromus variegatus, *Fab.* One specimen, 1904.
Chrysopa flavifrons, *Brau.* Two, 1904.

ORTHOPTERA.

EUPLEXOPTERA.

Forficula auricularia, *L.* (The common earwig). Abundant.

CURSORIA.

Ectobia Panzeri, *Steph.* One.
E. livida, *Fab.* Very common.

SALTATORIA.

Phasgonura viridissima, *L.* One immature specimen.
Stenobothrus bicolor, *Charp.* Abundant; very variable in size and colour.

COLEOPTERA.

GEODEPHAGA.

Cicindela campestris, *L.* Common in April and May.
Notiophilus biguttatus, *F.* Common.
Leistus spinibarbis, *F.* One, June 15, 1889.
L. fulvibarbis, *Dej.* One, May, 1904.
Nebria complanata, *L.* Taken by Dr. F. C. Lukis about the year 1860, but has not been seen by Mr. Marquand or myself.
Harpalus ruficornis, *F.* One.
H. rufibarbis, *F.* One, June 15th, 1889.
H. æneus, *F.* One, May, 1904.
H. tardus, *Panz.* Three, June, 1904.
Pterostichus mandidus, *F.* Not uncommon.

Amara tibialis, *Payk.* Two specimens.
A. familiaris, *Duft.* June 15, 1889.
A. trivialis, *Gyll.* Common.
A. continua, *Thoms.* One, August, 1904.
Calathus melanocephalus, *L.* Common.
C. mollis, *Marsh.* Common near the coast, June 15, 1889.
Pristonychus terricola, *Herbst.* One, May, 1904.
Cymindus axillaris, *F.* Two specimens under stones on cliffs, June 15, 1889, W. A. L.; one, May, 1904, E. D. M.
Dromius linearis, *Ol.* Common.
D. melanocephalus, *Dej.* Two, June, 1904.
Demetrius atricapillus, *L.* Several, June 15, 1889.
Metabletus foveola, *Gyll.* Common.

HYDRADEPHAGA.

Hydroporus lepidus, *Ol.* In water tank.
Agabus bipustulatus, *L.* Several seen in water tank.
Acilius sulcatus, *L.* In water tank.

CLAVICORNIA.

Sphæridium scarabæoides, *F.* Several.
S. bipustulatum, *Fab.* One.
Cercyon obsoletus, *Gyll.* Several on sandy common, 1889, W. A. L.; one, 1904, E. D. M.
C. littoralis. One.

STAPHYLINIDÆ.

Aleochara lata, *Grav.* Several specimens.
A. bipunctata, *Ol.* One, May, 1904.
A. lanuginosa, *Grav.* One.
A. nitida, *Grav.* Several specimens taken.
Astilbus Canaliculatus, *F.* Not uncommon.
Homolota xanthopus, *Thoms.* One.
Tachyporas chrysomelinus, *L.* Common.
T. hypnorum, *F.* Abundant.
T. formosus, *Matth.* One.
Tachinus rufipes, *L.* Common.
Queduis fuliginosus, *Grav.* Common, June 15, 1889.
Q. subæneus, One.
Philonthus cruentatus, *Gmel.* Several, on June 15, 1889.
Cafius xantholoma, *Grav.* One, June 15, 1889.
C. sericeus, *Holme.* One, August, 1904.
Xantholinus punctulatus, *Payk,* Common.
Paderus littoralis, *Grav.* Two, June 15, 1889.
Stenus declaratus, *Er.* One.
S. annulatus, *Crotch.* Two, June 15, 1889.
S. cicindeloides, *Grav.* Two.
Oxytelus mixtus. One.
Philorhinum humile, *Er.* Two, June, 1904.

SILPHINA.

Anisotoma calcarata, *Er.* One, August, 1904.
Necrophorus vespillo, *L.* One, under carcase of dead rabbit.
Silpha sinuata, *F.* Common.
S. atrata, *L.* Not uncommon.
Choleva Watsoni, *Spence.* One.
Saprinus aneus, *F.* Abundant.
Hister cadaverinus, *Hoff.* Common.
Meligethes picipes, *Sturm.* Two, June 15, 1889.
M. distinctus, *W.C.* One, May, 1904.
Corylophus sublævipennis, *Duv.* Three specimens, June, 1904.
Coccinella 11 punctata, *L.* Very common.
C. 7 punctata, *L.* Abundant.
Rhizobius litura, *F.* Very common.
Brachypterus pubescens, *Er.*
Epuræa æstiva, *L.* Several.
Olibrus liquidus, *Er.* Abundant, June 15, 1889.
Melanopthalma gibbosa, *Herbst.* One, June 15, 1889.
Antherophagus silaceus, *Herbst.* One.
Micrambe vini, *Panz.* Abundant.
Dermestes murinus, *L.* Abundant under dead rabbits.
Onthophagus vacca, *L.* One.
O. fraticornis, *Payck.* Common.
Aphodius fossor, *L.* Common.
A. fimetarius, *L.* One.
A. ater, *De G.* Common.
A. pusillus, *Herbst.* Not rare.
A. scybalarius, *F.* One.
Geotrupes typhæus, *L.* Common.
G. stercorarius, *L.* One, June 15, 1889, W. A. L.; one, 1904, E. D. M.
G. vernalis, *L.* One.
Trox scaber, *L.* Common in sandy places.
Melolontha vulgaris, *L.* Several, June 15, 1889; two, July, 1904.
Cetonia aurata, *L.* Have seen several specimens brought from Herm June 15, 1899, dead specimen on path.
C. morio. Not uncommon.
Lacon murinus, *L.* Very common.
Athous hæmorrhoidalis, *F.* Abundant.
Adrastus limbatus, *F.* Common.
Dasytes flavipes, *F.* One.
Anobium domesticum, *Fourc.* Common.

PHYTOPHAGA.

Lema melanopa, *L.* Two, August, 1904.
Timarcha violaceonigra, *De G.* Abundant.
Chrysomela hæmoptera, *L.* Common in sandy places.
C. polita. Three specimens taken May, 1904.
Longitarsus tabidus, *F.* Common.

Longitarsus lævis, *Duft.* Two.
L. jacobææ, *Wat.* Common.
Sphæroderma testaceum, *F.* Two.
Batophila serata, *Marsh.* Several.
Apteropeda orbiculata, *Marsh.* Common.
A. graminis, *Koch.* One, June, 1904.
Plectroscelis concinna, *Marsh.* Two.
Psylliodes atricilla, *Pans.* Common.

HETEROMERA.

Heliopathes gibbus, *F.* Not uncommon.
Helops striatus, *Fourc.* Two, June 15, 1889.
Cistela murina, *L.* Abundant.
Cteniopus sulphureus, *L.* Not common
Lagria hirta, *L.* Common.
Anopsis maculata, *Fourc.* Common.
Notoxus monoceros, *L.* Two.
Anthicus schaumi, *Woll.* One, June, 1904.
Meloe proscarabæus, *L.* Common.
M. autumnalis, *Ol.* One.

RHYNCHOPHORA.

Apion ulicis, *Forst.* Common.
A. cruentatum, *Walton.* Three.
A. affine, *Kirby.* Not uncommon.
A. difforme, *Germ.* Several.
A. nigritarse, *Kirb.* Two.
Otiorrhynchus picipes, *F.* Common.
O. sulcatus, *F.* Two.
O. rugifrons, *Gyll.* Two, June 15, 1889.
Strophosomus coryli, *F.* Not uncommon.
Barypeithes sulcifrons, *Boh.* Common.
Liophlæus nubilus, *F.* Three, August, 1904.
Phyllobius pyri, *L.* Not uncommon.
Philopedon geminatus, *F.* Common.
Sitones tibialis, *Herbst.*
S. lineatus, *L.*
Orchestes alni, *L.* Common.
O. alni, var. *ferrugineus.* Common as the type.
Anthonomus rubi, *Herbst.*
Cœliodes quadrimaculatus, *L.* Common.
Ceuthorrhynchus pollinarius, *Forst.* Abundant.

HYMENOPTERA.

HETEROGYNA.

Formica fusca, *Linn.* Common.
Lasuis niger, *Linn,* race Alienas, *Forst.* Not uncommon.
Tetramorium cæspitum, *Lin.* Not uncommon on the cliffs.
Myrmica rubra, *Linn,* race Scabrinoides. Common.

FOSSORES.

Ammophila lutaria, *F.* Several, July, 1900, W. A. L.; one, June, 1904, E. D. M.

Mellinus arvensis, *Lin.* Abundant.

DIPLOPTERA.

Vespa sylvestris, *Scop.* Two, August, 1904.

Odynerus spinipes, *Linn.* Three.

O. pictus, *Curt.* Common.

O. parietinus, *Linn.* One specimen taken by Mr. E. D. Marquand; new to Channel Islands list.

ANTHOPHILA.

Colletes succincta, *Linn.* Abundant.

Prosopis brevicoruis, *Nyl.*

Specodes similis, *Wesm.* One.

Halictus rubicundus, *Chris.* Not uncommon.

H. cylindricus, *Fab.* Common.

H. nitiduseulus, *Kirb.* One. Not on the Guernsey list.

H. tumulorum, *Linn.* One.

H. morio, *Fab.* Very common.

Andrena pilipes, *Fab.* Not uncommon.

A. rosæ, *Panz,* race Trimmerana, *Kirb.* Not uncommon.

A. rosæ, *Panz,* variety Spinigera, *Kirb.* One specimen of this rarity captured by Mr. Marquand; it is new to the Channel Islands list.

A. thoracica, *Fab.* Common.

A. cineraria, *Linn.* Commoner than in Alderney.

A. fulva, *Schr.* One specimen, April, 1904.

A. nigroænea, *Kirb.* Four, May and June, 1904.

A. Gwynana, *Kirb.* Not uncommon.

A. angustior, *Kirb.* The commonest of the *Andrenas;* one specimen, a female, has a black face, which Mr. Saunders remarks is very interesting.

A. apicata, *Smith.* One specimen of this rare species taken April, 1904, by Mr. Marquand; it is new to the Channel Islands list.

A. nigriceps, *Kirb.* Three specimens. Not on the Guernsey list.

A. fulvicrus, *Kirb.* Three specimens.

A. nana, *Kirb.* Not uncommon. Not on the Guernsey list.

A. wilkella, *Kirby.* Two specimens. Not on the Guernsey list.

A. lapponica, *Smith.* One specimen, June, 1904.

Nomanda succincta, *Panz.* Common.

N. lineola, *Panz.* Abundant.

N. ruficornis, *Linn.* One.

N. fabriciana, *Linn.* One, June, 1904.

APIDÆ.

Megachile maritima, *Kirby.* The leaf cutting bee. Abundant. July and August.

Osmia aurulenta, *Panz.* Not uncommon.

Anthidium manicatum, *Linn.* Common.

Anthophora retusa, *L.* Two.

Podalirius quadrimaculata, *Panz.* One. Not on the Guernsey list.

Psithyrus vestalis, *Fourc.* One, June 15th, 1889, W. A. L.; one, August, 1904, E. D. M.

Bombyx smithianus, *White.* Not uncommon.

B. agrorum, *F.* Two.

B. hortorum, *L.* One.

B. Derhamellus, *Kirb.* One.

B. lapidarius, *L.* Common.

B. terrestris, *L.* Common.

Apis mellifica, *L.* No specimens were seen by Mr. Marquand before the month of August.

ICHNEUMONIDÆ.

Ichneumon confusorius, *Grav.* Several specimens captured in 1904.

Heplopelmus variegatorius, *Panz.* Two specimens of this rare and lovely species were taken by Mr. E. D. Marquand. In Mr. C. Morley's recent work on the British *Ichneumons*, four localities only are recorded for Great Britain; one of them being Land's End in Cornwall, where Mr. E. D. Marquand took it in 1884. On the Continent its range extends from Belgium through Central Europe to Russia.

Diadromus trogladytes, *Grav.* One.

Cryptus peregrinator, *Gr.* One.

Pezomachus analis, *Fst.* One.

Campoplex? *Sp.* One specimen, name not yet been ascertained.

Pimpla instigator, *Gr.* Three, one being a very small specimen.

P. examinator, *Gr.* Three.

P. turionellæ, *Gr.* Two.

P. ornata? *Grav.* One.

Limneria? *Sp.* Two specimens, not yet identified.

CYNIPIDÆ.

Rhodites spinosissimæ, *Giraud.* The galls formed by the larvæ of this species are common on the Wild Rose. *(Rosa spinosissima.)*

Diastrophus rubi, *Htg.* The larvæ of this species form galls on the stems of the common bramble.

TENTHREDINÆ.

Tenthredopsis coqueberti, *Kl.* One very dark male. Not on the Guernsey list.

Selandria stramineipes, *Klug.* One.

Athalia spinarum. One male and one female.

Strongylogaster cingulatus, *Fab.* One.

Hoplocampa crataegi, *Klug.* Two.

H. alpina. One.

Kaliosysphinga ulmi. One.

DIPTERA.

Cecedomyia urticæ, *Perris.* This species is known as the "nettle gnat." It causes irregular shaped galls on the leaves and stems of the common stinging nettle (*Urtica Dioca*).

Bibio marci (St. Mark's Fly), *L.* Common.

B. hortulanus, *L.* Not uncommon.

B. laniger, *Mg.* Not rare.

Dicranomyia dumetorum, *Mg.* Several.

Pachyrrhina maculosa, *Mg.* Common.
P. histrio, *F.* Two specimens.
Tipula oleracea, *L.* Common.
T. gigantea, *Schrk.* One, 1886.
Diochria Baumhaueri, *Mg.* One.
Epitriptus cingulatus, *F.* June 25, 1889.
Anthrax paniscus, *Rossi.* Two.
Thereva nobilitata, *F.* Not uncommon.
T. annulata, *F.* Common on the sandy coast at the north of the island.
Hybos femoratus, *Müll.* One.
Pachymeria femorata, *F.*
Tachista arrogans, *L.* Several.
Dolichopus æneus, *Deg.* Two.
Hercostomus gracilis, *Stan.* Not uncommon.
Syrphus balteatus, *Deg.* Two.
S. bifasciatus, *F.* Not uncommon.
S. corollæ, *F.* Common.
S. nitidicollis, *Mg.* One.
Catobomba pyrastri, *L.* Two.
Sphærophoria scripta, *L.* Common.
Volucella bombylans, *L.* Both the red and yellow tailed varieties of this species were taken by Mr. Marquand.
Erastalis sepulchralis, *L.* Two, 1889.
E. arbustorum, *L.* Common.
E. tenax, *L.* Very common.
E. pertinax, *Scop.* Common.
Syritta pipiens, *L.* Common.
Eumerus strigatus. One.
Chrysotoxum bicinctum, *L.* Several.
C. festivum, *L.* One.
Myopa buccata, *L.* One.
Thryptocera bicolor, *Mg.* One, 1904. Not on the Guernsey list.
Sarcophaga carnaria, *L.* Common.
Lucilia cæsar, *L.* Common.
L. sericata, *Mg.* Not uncommon.
Calliphora erythrocephala, *Mg.* Common.
C. vomitoria, *L.* Common.
Musca domestica, *L.* Not uncommon.
Morellia hortorum, *Flu.* One.
Stomoxys calcitrans, *L.* Several.
Ophyra leucostoma, *W.* One.
Hyetodesia lucorum, *Fln.* One.
Hoplogaster mollicula, *Fln.* Common.
Scatophaga stercoraria, *L.* Common.
Cœlopa parvula, *Hal.* One.
Orygma luctuosum, *Mg.* One.
Opomyza germinationis, *L.* Three.
Sepsis ? violacea. One.

THE INSECTS OF JÉTHOU.

BY MR. W. A. LUFF, F.E.S.

JETHOU is a small islet lying to the south of Herm, from which it is separated by a narrow but deep channel.

It is almost circular in shape and measures about half a mile in diameter. Except at one spot, its sides are everywhere precipitous. There is very little of Jethou under cultivation, except a small plateau on the summit; the rest is in fact a rabbit warren.

On the north side, near the two dwelling houses are a number of apple and other trees. On the north-west it is connected at low water by a rough causeway with a mass of rock called Crevichon, which is covered with vegetation. The Insects enumerated in the following list were all captured during two very enjoyable excursions of this Society on June 25th, 1890, and June 26th, 1894. It cannot, therefore, lay claim to be in any way exhaustive, but will serve to show how great is the variety of insect life even in the smallest of the Channel Islands.

The only insect not on the Guernsey list is *Taphria nivalis*, a beetle which cannot be considered a common species.

LIST OF THE INSECTS OF JETHOU.

LEPIDOPTERA.

RHOPALOCERA (Butterflies).

Pieris brassicæ, *L.* One, June 25th, 1890.

P. rapæ, *L.* One, June 25th, 1890. Saw several June 26th, 1894.

Pyrameis cardui, *L.* One, June 26th, 1894.

Epinepele janira, *L.* One, June 25th, 1890; three, June 26th, 1894.

Cœnonympha pamphilus, *L.* Common.

Lycæna ægon, *Schiff.* One captured, several others seen, June 25th, 1890.

L. argiolus, *L.* Several flying about the tops of apple trees. One captured, June 25th, 1890.

L. icarus, *Rott.* One, June 26th, 1894.

HETEROCERA (Moths).

Euchelia jacobææ, *L.* Abundant.
Phlogophora meticulosa, *L.* One specimen on Crevichon, on the north-west of the island, June 25th, 1890.
Hadena oleracea, *L.* One, June 26th, 1894.
Acidalia rusticata, *F.* One, June 26th, 1894.
A. promutata, *Gn.* Several resting on rocks near the coast.
Melanippe galiata, *Hb.* Two, June 26th, 1894.
Camptogramma bilineata, *L.* Common.
Scoparia dubitalis, *H.B.* One, June 26th, 1894.
Herbula cespitalis, *Schiff.* Two, June 25th, 1890.
Nomophila noctuella, *Schiff.* Common.
Plutella cruciferarum, *Zell.* Several, June 25th, 1890.
Depressaria costosa, *Haw.* One.
Nepticula aurella, *F.* Larvæ common.

HEMIPTERA-HETEROPTERA.

Piezodorus lituratus, *Fab.* Several.
Syromastes marginatus, *Lin.* One.
Henestaris laticeps, *Curt.* Several.
Aphanus quadratus, *Fab.* One.
Miris lævigatus, *Lin.* Common.
Calveoris bipunctatus, *Fab.* Two.
Lygus pratensis, *Fab.* Common.

ORTHOPTERA.

Forficula auricularia, *L.* (The Common Earwig). Abundant.
Ectobia livida, *Fab.* Common.
Stenobothrus bicolor, *Charp.* Three, June 25th, 1890.

COLEOPTERA.

Cicindela campestris, *L.* Several seen, one captured, June 25th, 1890.
Harpalus æneus, *F.* Several under stones.
H. consentaneus, *Dej.* One, June 25th, 1890.
Pterostichus mandidus, *F.* Two, June 26th, 1894.
Calathus melanocephalus, *L.* Common.
Taphria nivalis, *Panz.* One, June 25th, 1890.
Demetrius atricapillus. One, June 26th, 1894.
Dromius linearis, *Ol.* One.
Queduis fuliginosus, *Grav.* Several, 1894.
Pœderus littoralis, *Grav.* One.
Saprinus æneus, *F.* Not uncommon.
Coccinella 11 punctata, *L.* Common.
C. 7 punctata, *L.* Abundant.
Platynaspis luteo-rubra. One.
Dermestes murinus, *L.* Several.
Geotrupes typhæus, *L.* Not uncommon.

Geotrupes stercorarius, *L.* Two.
G. vernalis, *L.* Two captured, June 26th, 1894.
Lacon murinus, *L.* Not uncommon.
Athous hæmorrhoidalis, *F.* One, June 26th, 1894.
Tachyporus hypnorum, *F.*
Stenus annulatus.
Silpha atrata, *L.* Three, June 25th, 1890. Several, June 26th, 1894.
Lagria hirta, *L.* Saw several.
Rhizobius litura, *F.* Common.
Longitarsus jacobææ, *Wat.* Not uncommon.
Apion miniatum, *Germ.*
Sitones tibialis, *Herbst.*
Philopedon germinatus, *F.*

HYMENOPTERA.

Formica fusca, *Linn.* Common.
Tetramorium cæspitum, *Linn.* Two, June 26th, 1894.
Pompilus gibbus, *Fab.* One, June 25th, 1890.
Diodontus minutus, *Fab.* One, June 26th, 1894.
Pemphredon lethifer, *Shuck.* Two, June 26th, 1894.
Mellinus arvensis, *Linn.* Common.
Crabro elongatulus, *Lind.* One, June 26th, 1894.
Halictus rubicundus, *Chris.* Several.
H. Smeathmanellus, *Kirb.* Common.
H. morio, *Fab.* Common.
Andrena thoracica, *Fab.* One, June 26th, 1894.
A. nigroænea, *Kirb.* One, June 25th, 1890.
Nomanda ruficornis, *Linn.* Two, June 25th, 1890.
Osmia aurulenta, *Panz.* One, June 26th, 1894.
Psithyrus vestalis, *Fourc.* Several, June, 1890 and 1894
Bombyx lapidarius, *Linn.* Common.
B. terrestris, *Linn.* Common.

DIPTERA.

Thereva annulata, *F.* Common.
Syrphus balteatus, *Deg.* One.
Sphærophoria scripta, *L.* Not uncommon.
Syritta pipiens, *L.* Several, June, 1890.
Myopa buccata, *L.* One, June 26th, 1894.
Sarcophaga carnaria, *L.* One.
Lucilia cæsar, *L.* Common.
Calliphora vomitoria, *L.* Common.
Scatophaga stercoraria, *L.* Common.

THE RAINFALL OF GUERNSEY FOR THE YEAR 1904.

BY MR. A. COLLENETTE, F.C.S.

DURING January eight stations were co-operating. On the 1st of February the gauge which had been returned from "Claire Mare" (having been thoroughly repaired) was placed at Hautnez, Forest Road, the obliging Secretary of the Guernsey Waterworks Company having very kindly consented to assist in the rainfall work. From the 1st of February therefore there have been nine stations co-operating. During part of July and September as well as the whole of August, returns were sent in by Mr. Curtis, who possesses a gauge, at Mont Saint, St. Saviour's. Unfortunately this gauge is not in use during the remainder of the year. In the discussion which follows the tables have been completed for Hautnez for January, and for July and September for Mont Saint. The additions have been made in the same proportions as the actual rainfall bears to Brooklyn. The figures thus increased are printed in italics and are of no use except for the purposes of discussion.

A table giving the addresses of the observers, the positions of the stations and their elevations is now given.

TABLE I.

Ref. Nos.	Observer.	Address.	Position in Island.	Elevation. Feet.
1	Guernsey Waterworks Co.	"Hautnez," Forest Road	S.	343
2	Mr. A. Collenette.....	"Brooklyn," Fort Road	S.E.	300
3	Mr. B. Rowswell	"Les Blanches," St. Martin's..	S.E.	300
4	Dr. F. Carey.....	"Villa Carey," Grange	E.	180
5	Mr. J. Guilbert.....	"Colborne Villa," Rohais.....	E.	145
6	Mr. J. De Putron.....	"Caledonia Nursery," Couture..	E.	100
7	Mr. Curtis	"Mont Saint," St. Saviour's....	W.	125
8	Mr. J. J. Carey.....	"Holme Isla," Cobo	W.	70
9	Mr. J. Hocart	"Les Mielles," l'Ancresse.....	N.E.	33
10	Mr. A. Poat	"Richmond," St. Sampson's ..	N.E.	25

In studying the second table and comparing last year's results with those of 1903 it must be noticed that the reference numbers are changed. This has been rendered necessary by plan adopted of, first, showing the stations in order of elevation, and second, of grouping the stations in order of their position in the island. It has been found that, as a rule, both elevation and position are factors which have a large influence on the rainfall, hence it is convenient to thus group the stations.

To avoid unnecessary work in the compiling and printing the tables the reference numbers and the grouping are used instead of the names of the stations in all the tables.

The fall for 1904 has exceeded the average by 1·10 inch. This excess has been insufficient to alter the 62 years' average which remains at 36·62 inches, as it was for the previous year.

There have been differences in the month's totals, but they are equally divided into six wet and six dry months. The wet months were January, February, May, July, October and December. The greatest departure from the average was in February, that month being 2·33 inches in excess of its average. October was, as usual, the wettest month, having given a total of 5·94 inches. The next wettest was January, with 5·19 inches. February follows with 4·97 inches, the remainder give no totals reaching 3 inches. The driest month was April, with 1·35 inches, closely followed by March and May.

TABLE II.

THE RAINFALL OF 1904 COLLECTED AT FORT ROAD
Compared with the Averages.

	1904.	62 Years' Average.	Above.	Below.	Wet Days.	
					1904.	Av'ge.
January	5·19	3·83	1·36	—	21	19
February	4·97	2·64	2·33	—	25	15
March	1·57	2·47	—	0·90	13	16
April	1·35	2·35	—	1·00	15	13
May	2·42	2·15	0·27	—	22	11
June	1·38	2 02	—	0·64	11	10
July	2·38	2·20	0·18	—	11	11
August	2·20	2·47	—	0·27	17	12
September	2·79	3·11	—	0·32	16	14
October	5·94	4·87	1·07	—	19	19
November	2·75	4·36	—	1·61	22	19
December.....	4·78	4·15	0·63	—	19	19
The Year.....	37·72	36·62	1·10	—	211	178

In discussing the general rainfall of the whole island as shown in Table III., giving the figures for each of the ten

stations, we find that the stations come out in order of quantities as follows :—

TABLE III.

GUERNSEY RAINFALL FOR THE YEAR 1904.

Results of Daily Observations at Ten Stations compared with the Averages.

Months.	South.	South-East.		East—Town.			West.		North-East.		Means of all Stations.	62 Years' Averages
	1	2	3	4	5	6	7	8	9	10		
January	**5·06**	5·19	5·04	5·01	5·55	5·41	—	5·19	5·91	5·92	5·32	3·83
February	4·54	4·97	4·72	4·65	5·05	5·07	—	4·77	4·95	5·04	4·77	2·64
March	1·76	1·57	1·72	1·40	1·60	1·49	—	1·48	1·66	1·67	1·53	2·47
April	1·28	1·35	1·25	1·19	1·17	1·25	—	1·09	1·31	1·37	1·22	2·35
May	2·39	2·42	2·24	2·24	2·21	2·24	—	2·13	2·28	2·18	2·23	2·15
June	1·42	1·38	1·31	1·33	1·34	1·23	—	1·32	1·28	1·37	1·29	2·02
July	2·55	2·38	2·48	2·29	2·26	2·22	**2·30**	2·33	2·65	2·84	2·43	2·20
August	2·05	2·20	2·27	2·10	2·01	2·03	1·75	1·69	2·27	2·38	2·07	2·47
September	2·70	2·79	2·77	2·59	3·04	2·91	**2·75**	2·74	2·36	2·62	2·72	3·11
October	5·65	5·94	5·42	5·25	5·61	5·15	—	4·95	5·08	5·08	5·31	4·87
November	2·81	2·75	2·56	2·73	2·98	2·46	—	2·11	2·69	2·35	2·54	4·36
December	4·75	4·78	4·46	4·28	4·81	4·55	—	3·84	4·95	4·30	4·52	4·15
Year's Totals ..	36·96	37·72	36·24	35·06	37·63	36·01	—	33·64	37·39	37·12	35·97	36·62

The quantities printed in black type have been proportionately increased in order to complete the table, but the observations actually taken were not for complete months.

Fort Road being taken for 100, Rohais has collected 99%, l'Ancresse 98%, St. Sampson's 98%, Forest Road 97%, Les Blanches 96%, Couture 95%, The Grange 94%, Cobo 89%.

The year's work has therefore confirmed the distribution of rain over the island, which was indicated by the work of the sub-stations in 1903. That is that the largest amount of rainfall is collected on the east coast and in town, and that the

amount diminishes fairly regularly as we proceed to the west and south-west. I have no doubt that the explanation given in former papers is the correct one, namely, that the prevailing winds being south-west, the rain is lifted by the rise of the land and falls on the lee side, or east of the island.

The peculiarity of the year is, that although this holds as a rule, the two first months of the year (and in a minor degree during April, July and August) were exceptions to that rule. The falls were in those months, taken together, as follows :—

St. Sampson's, 10·96 ins., taken as 100; l'Ancresse, 10·86 in., = 99%; Rohais, 10·66 ins., = 95%; Couture, 10·48 ins., = 95%; Fort Road, 10·16 ins., = 92%; Cobo, 9·96 ins., = 90%; Les Blanches, 9·76 ins., = 89%; Grange, 9·66 ins., = 88%; Forest Road, 9·60 ins., = 87%.

The rainfall of January and February was therefore heaviest at l'Ancresse and St. Sampson's, next heaviest in Town, then at Fort Road and Cobo, and least at Les Blanches and Forest Road. That is, instead of the falling off being from east to west, it was from north-east to south-west. The abnormal conditions only lasted for those two months, but it took quite seven months to wipe out the differences and restore the normal order.

The explanation is to be found in the strength of the wind. I find that the stronger the south-west wind is the further the rain is carried while being lifted over the island, and several abnormal falls over l'Ancresse are to be thus explained. The mileage of the wind for the two months was 11,810 and 13,520, while the next roughest month was but 10,190 (December), the remaining months averaging about 7,000. The general tendency is, therefore, for the heaviest rainfall to occur over the town side of St. Martin's and the Town, and in a lesser degree to extend to the east coast of the island, and further to diminish in quantity as we reach the south-west and west coasts. The only station interfering with this rule is the Grange, which is abnormally low. The causes of the lessened rainfall of the Grange are, as I stated last year, to be found in *(a)* the shelter of trees, and *(b)* the indraught of the Vauvert Valley.

A study of the table will bring out some peculiarities. Take for instance the departure from the normal of the l'Ancresse falls. We now have a nine years' average for this station, and this shows that l'Ancresse is below the Hoskins-Collenette series all through the year. This year, owing to the causes already discussed, it was above during January and February, when it got a good lead. We know that this was

a real difference because the St. Sampson's gauge confirms the results.

This peculiarity in the rainfall is brought out by grouping. If all the stations near the east coast are taken together they will be found to lead, the town stations are second, and the west coast third in quantity.

If the east coast stations are compared, Fort Road collects most, l'Ancresse next, St. Sampson's third, and Les Blanches least. The fall diminishes, therefore, from Town to both south and north.

TABLE IV.

HEAVY FALLS.

Date.	1	2	3	4	5	6	8	9	10
January 27....	—	0·78	0·78	0·71	0·88	0·75	0·87	1·10	0·82
February 16 ..	0·61	0·75	0·62	0·62	0·80	0·71	0·81	0·72	0·79
July 25	0·83	0 82	0·84	0·76	0·78	0·75	1·01	1·06	0·83
September 11 ..	0·73	0·75	0·74	0·68	0·80	0·68	0·81	0·47	0·55
October 2	2·54	2·72	2·42	2·41	2·49	2·22	2·59	2·38	2·36
,, 6	1·26	1·22	1·24	1·09	1·09	1·05	0·97	0·98	0·97
December 6 ..	1·00	1·02	0·84	0·89	1·09	0·98	1·00	1·06	1·15
Quantities	6·97	8·06	7·48	7·16	7·93	7·14	7·66	7·77	7·47
Order	4	1	6	8	2	9	5	3	7
Order in Totals for the Year.	4	1	6	8	2	7	9	3	5

This table shows that, with the exceptions of Couture, Cobo and St. Sampson's, 6, 8 and 10, the heavy falls were influenced by the laws governing the distribution.

DROUGHTS.

Fourteen dry days in succession, or over, occurred as follows:—

March 8-23 at Grange and Cobo.

July 1-15 at Hautnez; July 1-19 at Cobo; July 1-22 Couture and Rohais.

TABLE V.

WET DAYS.

Months.	STATIONS.											
	1	2	3	4	5	6	7	8	9	10	Mean of all.	62 Av'ge.
January	—	21	21	23	21	20	—	21	22	25	21	19
February	24	25	26	24	25	24	—	23	25	25	24	15
March	13	13	14	12	14	12	—	10	14	15	12	16
April	13	15	12	11	10	13	—	11	10	12	12	13
May.....	21	22	20	21	18	21	—	19	22	20	20	11
June	11	11	12	11	10	9	—	10	11	11	10	10
July.....	9	11	13	8	8	8	8	9	12	12	11	11
August	15	17	16	15	15	13	17	16	15	16	15	12
September	16	16	17	16	17	15	—	16	15	16	16	14
October	19	19	19	19	20	15	—	16	16	18	18	19
November	18	22	20	19	19	18	—	17	18	18	19	19
December	18	19	19	19	24	18	—	18	19	19	19	19
Year	177	211	209	198	201	186	—	186	199	207	197	178

The variation in wet days is thus seen to possess a range of 25 days. This is brought about by small showers falling in one place and not in another. It will be noticed that the stations having more than 200 are east coast stations.

THE SUNSHINE OF GUERNSEY FOR THE YEAR 1904.

BY MR. A. COLLENETTE, F.C.S.

THE year 1904 proved to be an average one as regards sunshine, its total being 1925·75 hours, and the average of the eleven years during which these observations have been taken is 1927·11 hours, the difference being only 1·36 hours.

There were four gloomy months, viz.: January, May, August and October. January and October differed from their averages by 5·37 and 2·21 hours respectively, but May and August fell off enormously, for their deficits were 49·30 and 24·89 hours respectively.

TABLE I.

Months.	1904.	Average of Eleven Years.	Difference between 1904 and Average.		Sunless Days.		The Possible Sunshine. M'thly Totals.	1904.—Per'nt. of the Poss.	Mean Daily Sunshine.	
			Above.	Below.	1904.	A'ge	Whole Nos.		1904.	Av'ge of 11 Years.
January ..	45·27	50·64	—	5·37	11	10	264	17	1·4	1·6
February .	89·20	83·86	5·34	—	4	7	278	32	3·1	3·0
March	150·52	142·85	7·67	—	3	3	365	41	5·0	4·6
April	213·66	195·88	17·78	—	1	2	410	52	7·1	6·5
May.....	205·04	253·34	—	49·30	1	1	471	43	6·7	8·2
June	254·12	257·93	3·81	—	2	0	482	52	8·4	8·6
July.....	286·07	283·34	2·73	—	0	0	483	59	9·2	9·1
August ..	220·65	245·54	—	24·89	3	1	441	51	7·1	7·9
September	207·22	190·34	16·88	—	1	1	373	55	6·9	6·3
October ..	108·67	110·88	—	2·21	8	4	328	33	3·5	3·5
November.	92·67	69·36	23·31	—	8	8	268	34	3·2	2·3
December.	52·66	43·15	9·51	—	9	11	246	21	1·7	1·4
Totals ..	1925·75	1927·11	—	1·36	51	48	4409	43	5·3	5·3

In the first table will be found the whole detail of the monthly totals. In it may be seen the excesses of the remaining months. I need only draw attention to the

excesses of November and December. November's excess was 23·31 hours and December 9·51 hours.

There is such a large difference between these months in 1903 compared with 1904, that it is worth while drawing attention to it.

	1903.	1904.	Difference.
November	59·77 hrs.	92·67 hrs.	32·90 hrs.
December.....	30·89 „	52·66 „	21·77 „

As 1904 is 159 hours in advance of 1903, and the differences shown above amount to more than 54 hours, it will be seen that the excess of sunshine of 1904 over 1903 is one-third due to the surplus of these two months.

In cloudy days, 1904 gave three more than the average. August has one sunless day only in the averages. This year it gave three. June in the averages has no sunless day. This year it gave two. The excess is therefore chiefly owing to these months.

I have in previous years drawn attention to the wave-like trace presented by the annual totals. I wish again to show that the years '96, '97, '98 and '99 were ascending years, and 1900, '01, '02 and '03 were descending years. 1904 has again begun the ascending curve.

It is now only necessary for me to draw attention to the tables for two items of interest. First, that 300 hours and over were recorded in the summer months of '95, '96, '97, '98, '99, 1900, that is during the upper part of the curve, before '95 and after 1900 the sunniest month were below 300 hours. Second, that although the mean daily sunshine varies from the averages in most months, yet the annnal value of the daily mean remains uninfluenced. The eleven years show that, so far, we may consider that the daily mean of sunshine is 5·3 hours, but this varies in the different months from 1·4 hours in December to 9·1 hours in July.

The percentage of sunshine yielded by the different months is as follows:—The mean year being taken for 100 January gives 2·6%, February 4·3%, March 7·3%, April 10·2%, May 13·2%, June 13·4%, July 14·8%, August 12·8%, September 9·9%, October 5·7%, November 3·6%, December 2·2%.

TABLE II.

SUNSHINE IN GUERNSEY. ELEVEN YEARS' RESULTS.

Years.	Annual Totals. *Hours.	No. of hours below the Sunniest Year.	Above or below the average of Eleven Years.	Percentage of Possible Sunshine.	Sunless Days.	Sunniest Month.		Sunniest Day.			Percentage of each year, taking 1899 as 100.
						*No. of Hours.	Month.	No. of Hours.	Day of Month	Month.	
1894	1,724	490	— 203	39	49	230	May	14·43	13th	June	77
1895	2,069	145	+ 142	47	50	310	May	14·75	3rd	July	93
1896	1,825	389	— 102	41	61	307	May	15·02	11th	June	82
1897	1,874	340	— 53	42	53	305	July	15·00	11th	June	84
1898	2,090	124	+ 163	43	40	338	July	15·00	7th	July	94
1899	2,214	—	+ 287	50	43	340	July	14·50	11th	June	100
1900	2,026	188	+ 101	45	51	326	July	14·66	22nd	July	91
1901	1,897	317	— 30	42	50	276	May	14·50	5th	June	85
1902	1,768	466	— 155	40	53	285	July	14·70	3rd	June	80
1903	1,767	447	— 160	39	53	248	July	13·88	5th	Aug.	80
1904	1,926	288	— 1	43	51	286	July	14·50	27th	June	86
Means....	1,927	287	—	43	48	338	July	15·02	11th	June,'96	

* Decimals are omitted, the nearest whole number is used.

THE FAUNA AND FLORA

OF THE

SARNIAN ISLANDS.

In order to facilitate the work of students and others interested in the natural history of Guernsey and the neighbouring islands, an endeavour has here been made to draw up a Synopsis of the recorded Fauna and Flora, so far as lists of species have been published. In all cases the most recent and comprehensive publications known have been quoted; but even in those instances where merely rudimentary or very incomplete lists exist, these have been indicated, since they supply a certain amount of information on the subject which may be found useful.

The Sarnian Islands constitute what is termed the Bailiwick of Guernsey, and comprise all the Channel Isles which lie to the north of Jersey, namely, Guernsey, Alderney, Sark, Herm, Jethou, and the smaller islets.

The book quoted as "Channel Islands" is the second edition (1865) of Ansted and Latham's valuable work bearing that title; and *Transactions* are the annual Proceedings of the Guernsey Society of Natural Science, from 1882 onwards to the present time. Whenever possible, the number of species recorded up to this date for each individual island has been separately given, as well as the total number of species found in all the islands collectively. It must be borne in mind that Jersey is always excluded, except in the one or two cases specified, where the lists have not been kept distinct.

If the publication of this Synopsis should serve to direct the attention of naturalists to the many sections of the marine fauna which have hitherto been very inadequately studied in these islands, one of its main objects will be attained.

MAMMALIA.

List given in "Channel Islands," p. 201, with additions in *Transactions*, 1893, p. 253, and 1895, p. 6. Total for Sarnian Islands ..... 18 species.

BIRDS.

Recorded in Smith's "Birds of Guernsey, Alderney, Sark, Herm, and Jethou," published in 1879 (176 species), with additions in the "Zoologist," 1880 to 1888, and in *Transactions*, 1894, p. 319; 1903, p. 204 and 240; 1904, p. 323. Total for Sarnian Islands ..... 186 species.

REPTILES.

List in "Channel Islands," p. 208 (all occurring in Guernsey) ..... 3 species.

FISHES.

List of species enumerated in "Channel Islands," p. 209 (including Jersey) ..... 129 species.

MOLLUSCA, MARINE.

Marquand, *Transactions*, 1901, p. 70, with additions in *Trans.*, 1903, p. 202, and 1904, p. 314. Total for Sarnian Islands ..... 328 species.

MOLLUSCA, LAND AND FRESH-WATER.

Tomlin and Marquand, "Journal of Conchology," 1902, p. 285; *Transactions*, 1904, p. 315. Total for Sarnian Islands ..... 68 species.

TUNICATA (Ascidians).

List (chiefly for Guernsey) given in "Channel Islands," p. 219 ..... 46 species.

POLYZOA (Zoophytes).

List for Guernsey and Sark, given in "Channel Islands," p. 220 ..... 67 species.

CIRRIPEDIA (Barnacles).

List for Guernsey and Sark, given in "Channel Islands," p. 231 ..... 16 species.

CRUSTACEA, STALK-EYED.

List for Guernsey given in "Channel Islands." p. 232.... 55 species.

CRUSTACEA, SESSILE-EYED.

ISOPODA and AMPHIPODA.

List for Guernsey given in "Channel Islands," p. 234.... 27 species.

ENTOMOSTRACA.

Ibid., p. 235 ..... 13 species.

ARACHNIDA.

ARANEIDEA (Spiders):

Pickard-Cambridge, *Transactions*, 1894, p. 361; 1899, p. 379; 1902, p. 141; Luff, *Transactions*, 1895, p. 17; 1904, p. 322. (Guernsey, 42 sp. Alderney, 69 sp. Sark, 83 sp.) Total for Channel Islands (including Jersey) ..... 143 species.

PHALANGIDEA (Harvestmen):

Pickard-Cambridge, *Transactions*, 1899, p. 381; 1902, p. 144; the whole for Alderney alone ..... 3 species.

INSECTS: LEPIDOPTERA.

BUTTERFLIES.

Luff, *Transactions*, 1882, p. 61; 1893, p. 263; 1899, p. 388; 1900, p. 18, 30; 1901, p. 68; 1904, p. 374, 388. (Guernsey, 31 sp. Alderney, 25 sp. Herm, 17 sp. Jethou, 8 sp.) Total for Sarnian Islands..... 34 species.

MOTHS (MACRO-LEPIDOPTERA).

Luff, *Transactions*, 1889, p. 155; 1893, p. 263; 1895, p. 17; 1897, p. 144; 1899, p. 392; 1900, p. 18, 31; 1901, p. 68; 1902, p. 150; 1903, p. 199; 1904, p. 374, 388. (Guernsey, 269 sp. Alderney, 72 sp. Herm, 33 sp. Jethou, 7 sp.) Total for Sarnian Islands..... 274 species.

MOTHS (MICRO-LEPIDOPTERA).

Luff, *Transactions*, 1898, p. 267; 1899, p. 358, 395; 1901, p. 68; 1902, p. 150; 1904, p. 321, 374, 388. (Guernsey, 226 sp. Alderney, 64 sp. Herm, 27 sp. Jethou, 6 sp.) Total for Sarnian Islands ..... 249 species.

INSECTS: COLEOPTERA (BEETLES).

Luff, *Transactions*, 1893, p. 295; 1894, p. 326; 1895, p. 17; 1896, p. 93; 1898, p. 252; 1899, p. 358, 400; 1900, p. 18, 31; 1901, p. 69; 1902, p. 125, 150; 1904, p. 321, 374, 388. (Guernsey, 557 sp. Alderney, 156 sp Herm, 133 sp. Jethou, 29 sp.) Total for Sarnian Islands ..... 601 species.

INSECTS: HEMIPTERA (FIELD BUGS).

HETEROPTERA.

Luff, *Transactions*, 1890, p. 86; 1892, p. 210; 1893, p. 264; 1894, p. 326; 1895, p. 17; 1896, p. 93; 1897, p. 145; 1898, p. 252; 1899, p. 397; 1901, p. 69; 1902, p. 150; 1904, p. 374, 388. (Guernsey, 122 sp. Alderney, 56 sp. Herm, 23 sp. Jethou, 7 sp.) Total for Sarnian Islands ..... 134 species.

HOMOPTERA.

CICADÆ:

Luff, *Transactions*, 1892, p. 205; 1893, p. 264; 1899, p. 398; 1904, p. 374. (Guernsey, 43 sp. Alderney, 10 sp. Herm, 7 sp.) Total for Sarnian Islands ..... 46 species.

COCCIDÆ:

Luff, *Transactions*, 1903, p. 272, for Guernsey alone ..... 15 species.

INSECTS: HYMENOPTERA.

ACULEATA (Ants, Bees and Wasps):

Luff, *Transactions*, 1894, p. 347; 1895, p. 17; 1897, p. 145; 1899, p. 403; 1900, p. 31; 1901, p. 69; 1902, p. 125, 150; 1904, p. 321, 374, 388. (Guernsey, 108 sp. Alderney, 92 sp. Herm, 50 sp. Jethou, 17 sp.) Total for Sarnian Islands ..... 143 species.

TENTHREDINIDÆ (Sawflies):

Luff, *Transactions*, 1896, p. 118; 1899, p. 358, 406; 1900, p. 31; 1902, p. 126, 151; 1904, p. 386. (Guernsey, 28 sp. Alderney, 17 sp. Herm, 7 sp.) Total for Sarnian Islands ..... 39 species.

CYNIPIDÆ (Gall-flies):

Luff, *Transactions*, 1896, p. 92; 1902, p. 126, 151; 1904, p. 386. (Guernsey, 11 sp. Alderney, 1 sp. Herm, 2 sp.) Total for Sarnian Islands ..... 11 species.

ICHNEUMONIDÆ (Ichneumon Flies):

Luff, *Transactions*, 1899, p. 406, 1900, p. 31; 1902, p. 151; 1903, p. 246; 1904, p. 322, 386. (Guernsey, 41 sp. Alderney, 33 sp. Herm, 11 sp.) Total for Sarnian Islands ..... 71 species.

BRACONIDÆ:

Luff, *Transactions*, 1899, p. 406; 1903, p. 247. (Guernsey, 4 sp. Alderney, 1 sp.) Total for Sarnian Islands .. 5 species.

CHRYSIDIDÆ (Ruby Wasps):

Luff, *Transactions*, 1899, p. 405; 1903, p. 246; 1904, p. 321. (Guernsey, 6 sp. Alderney, 3 sp.) Total for Sarnian Islands ..... 6 species.

INSECTS: ORTHOPTERA (Crickets, Earwigs, Cockroaches).

Luff, *Transactions*, 1896, p. 113; 1897, p. 145; 1899, p. 399; 1901, p. 68; 1902, p. 150; 1904, p. 381, 389. (Guernsey, 17 sp. Alderney, 8 sp. Herm, 5 sp. Jethou, 3 sp.) Total for Sarnian Islands .... 17 species.

INSECTS: NEUROPTERA (Dragon Flies, &c.)

Luff, *Transactions*, 1891, p. 155; 1893, p. 264; 1894, p. 326; 1899, p 399; 1900, p. 31; 1902, p. 150; 1903, p. 199; 1904, p. 322, 381. (Guernsey, 49 sp. Alderney, 11 sp. Herm, 5 sp.) Total for Sarnian Islands ..... 51 species.

INSECTS: TRICHOPTERA (Caddis-Flies).

Luff, *Transactions*, 1891, p. 160; 1893, p. 264; 1899, p. 399; 1902, p. 150; 1904, p. 322. (Guernsey, 23 sp. Alderney, 5 sp.) Total for Sarnian Islands..... 24 species.

INSECTS: DIPTERA (Two-winged Flies).

Luff, *Transactions*, 1895, p. 54; 1896, p. 127; 1897, p. 145; 1898, p. 252; 1899, p. 358, 406; 1900, p. 18; 1902, p. 126; 1903, p. 199; 1904, p. 322, 386, 390. (Guernsey, 203 sp. Alderney, 54 sp. Herm, 52 sp. Jethou, 9 sp.) Total for Sarnian Islands ..... 221 species.

ANNELIDA AND TURBELLARIA (Worms).

List for Guernsey given in "Channel Islands," p. 236.... 17 species.

ECHINODERMATA (Starfishes and Sea Urchins).

List for the Sarnian Islands given in "Channel Islands," p. 237; Sharp, *Transactions*, 1890, p. 64 ..... 28 species.

ACALEPHÆ (Sea Nettles or Medusæ).

List for Sark given in "Channel Islands," p. 239 ..... 14 species.

ZOOPHYTES (Sea Anemones, &c.)

List for the Sarnian Islands of *Actinozoa* and *Hydrozoa* given in "Channel Islands," p. 240 ..... 73 species.

SPONGES.

List for Guernsey and Sark (compiled by Dr. Bowerbank) given in "Channel Islands," p. 243 ..... 40 species.

FLOWERING PLANTS.

Marquand, "Flora of Guernsey and the Lesser Channel Islands" (1901); *Transactions*, 1902, p. 118, 145, 163; 1903, p. 192, 266; 1904, p. 309, 363. (Guernsey, 787 sp. Alderney, 516 sp. Sark, 431 sp. Herm, 292 sp. Brechou, 190 sp. Jethou, 179 sp.) Total for Sarnian Islands ..... 840 species.

EQUISETACEÆ (HORSETAILS).

Marquand, "Flora," p. 207, 386, 440, 458. (Guernsey, 3 sp. Alderney, 3 sp. Sark, 3 sp. Herm, 1 sp.) Total for Sarnian Islands ..... 4 species.

FERNS.

Marquand, "Flora," p. 208, 386, 440, 458; Derrick, *Transactions*, 1902, p. 120; Hurst, *Transactions*, 1902, p. 175; Marquand, *Transactions*, 1904, p. 370. (Guernsey, 19 sp. Alderney, 13 sp. Sark, 12 sp. Herm, 11 sp. Brechou, 9 sp. Jethou, 7 sp.) Total for Sarnian Islands..... 19 species.

LYCOPODIACEÆ AND CHARACEÆ.

Marquand, "Flora," p. 214, 215, 459; *Transactions*, 1902, p. 147; 1903, p. 268. (Guernsey, 6 sp. Alderney, 2 sp. Herm, 1 sp.) Total for Sarnian Islands ..... 6 species.

MOSSES.

Marquand, "Flora," p. 216, 387; Hurst, *Transactions*, 1902, p. 176; Marquand, *Transactions*, 1903, p. 195, 223, 268; 1904, p. 371. (Guernsey, 145 sp. Alderney, 106 sp. Sark, 60 sp. Herm, 63 sp. Brechou, 4 sp.) Total for Sarnian Islands ..... 165 species.

HEPATICÆ (SCALE MOSSES AND LIVERWORTS).

Marquand, "Flora," p. 230, 392; *Transactions*, 1903, p. 226; 1904, p. 372. (Guernsey, 40 sp. Alderney, 21 sp. Sark, 22 sp. Herm, 12 sp.) Total for Sarnian Islands .... 41 species.

FUNGI.

Marquand, "Flora," p. 234, 393; *Transactions*, 1901, p. 58; Hurst, *Transactions*, 1902, p. 176. (Guernsey, 613 sp. Alderney, 109 sp. Brechou, 4 sp.) Total for Sarnian Islands..... 625 species.

LICHENS.

Marquand, "Flora," p. 278, 398, 441, 459, 470; *Transactions*, 1904, p. 365. (Guernsey, 309 sp. Alderney, 115 sp. Sark, 91 sp. Herm, 44 sp. Jethou, 10 sp. Brechou, 7 sp.) Total for Sarnian Islands ..... 334 species.

MARINE ALGÆ (SEAWEEDS).

Marquand, "Flora," p 303, 404, 445; *Transactions*, 1902, p. 147; 1903, p. 268. (Guernsey, 252 sp. Alderney, 232 sp. Sark, 38 sp.) Total for Sarnian Islands .... 305 species.

FRESH-WATER ALGÆ.

Marquand, "Flora," p. 321. *Transactions*, 1903, p. 268; 1904, p. 311. (Guernsey, 50 sp. Alderney, 63 sp.) Total for Sarnian Islands ..... 84 species.

DESMIDIACEÆ.

Marquand, "Flora," p. 324; *Transactions*, 1903, p. 271; 1904, p. 311. (Guernsey, 14 sp. Alderney, 9 sp.)
Total for Sarnian Islands ..... 17 species.

DIATOMACEÆ.

Marquand, "Flora," p. 325. List for Guernsey alone.... 323 species.

ANIMALS recorded for the Sarnian Islands	.....	3215 species.
PLANTS ,, ,, ,,	.....	2762 ,,
Total	.....	5977 species.

THE CASTEL CHURCH.

BY THE REV. G. E. LEE, M.A., F.S.A.

In an article written in November, 1874, for the "St. James's District Magazine," the late Sir Edgar MacCulloch says that the parish of the Castel "was originally known as *La Paroisse du Grand Geoffroy* or *du Grand Sarrazin*." It is well to note that this name has no other authority than that of the fabulous *Dédicace des Eglises*, a work which is certainly not earlier than the end of the 16th century. The first mention of the Church by name occurs in a Bull of Pope Adrian IV. dated in 1155, by which the Abbey of Mont-St-Michel is confirmed in its possessions in Guernsey, including the Church of *Sancta Maria de Castro*, which formed part of a grant made to the Abbey by Duke Robert of Normandy, father of William the Conqueror. The *Château du Grand Sarrazin* recalls the name of *Tombeau du Grand Sarrazin*, given to a dolmen which formerly existed in the north of the island. The name Sarrazin was not unfrequently given to pirates of ancient times, and I am inclined to think that the Castel or Castrum which gave its title to this Church, was one of those rude fortifications of early times which are so common in our islands and on the adjacent mainland.

The Church, like others in our islands, consists of two naves and chancels of equal length, a fine tower and spire dividing the northern nave from the chancel. Examining the building from the outside we find at the west end of the northern nave a modern porch, the gable behind it having no buttresses. The south gable has two buttresses of two stages. The west windows date from 1836 and replace two smaller squareheaded openings. On the south side of the Church the nave has only two buttresses, while the chancel has four. Three of the big windows are dated respectively 1836, 1762 and 1750. The first is in the place of a squareheaded window like that adjoining the first buttress of the chancel. The large window in the choir is an original one and may be of the 15th century, still further east is another squareheaded opening

like those already mentioned. The window of 1750 cuts into the top of an ancient doorway of which the lower part is walled up; this doorway gave access to the chancel. On the east, the south window, perhaps of the 15th century, seems to have taken the place of an earlier window of two lights. The circular openings over this and the large window of the north chancel are modern. On the north side of the Church we again find buttresses of two stages like the others already mentioned, of different heights and rude construction. An ancient chantry projects from the north side of the tower, having on its east side the remains of a rudely constructed window with a quatrefoil in the head between two trefoils. In the gable is again a squareheaded opening. The nave has very massive and rudely shaped buttresses of one stage only, and in this wall there is only one little window, possibly modern, adjoining the tower. Between two of the buttresses are to be seen the remains of a wide doorway which was pierced in the north wall to admit the parish artillery into the nave, where the guns were kept. Inside this northern nave solid buttresses starting from the ground support the ribs of the roof, which in other parts of the Church rest upon corbels. The arcade of the nave contains pillars which seem to date from the 14th century. The northern chancel was thought by Sir E. MacCulloch to be older than the south, but the comparatively late vaulting of the tower, and the fact that the south chancel contained the priest's door, and was enclosed by screens whose places are well marked in the pillars, makes me believe that the principal altar was on the south side. There is a rude "squint" in the S.E. pier of the tower. In the east wall of the south chancel, on the north side of the altar, is an archway for which I cannot account. It looks too large for an awmbry and has no remains of hinges. It is not a doorway, for there is no sign of an opening on the outside of the wall.

The vault of the northern chancel contains the remains of some ancient frescos, of which Sir Edgar MacCulloch gave the following interesting account:—

"About the end of the year 1829 or the beginning of 1830, it was thought advisable to take precautions against the effects of lightning and a conductor was ordered, but when it came to be placed on the spire the workmen discovered that in consequence of some miscalculation it was not long enough. The work was accordingly suspended, leaving the lower end of the conductor hanging at a distance of about twelve feet from the ground, opposite to a window in the north wall of the chancel. A violent storm came on during the night from the 11th to the

12th of January, 1830; the lightning fell on the Church, descended by the conductor, and not being carried off into the ground, burst through the window and did some amount of damage to the interior of the Church, especially to the plastering. A meeting of the parishioners was convened some time afterwards for the purpose of taking measures for the repairing of the damage and putting the Church in order preparatory to an expected visit from the Bishop. An old man who was present said he remembered to have seen in his youth certain paintings on the vault of the chancel, but that they had disappeared under repeated coats of whitewash. Directions were accordingly given to the workmen to remove the whitewash carefully, and the result was the discovery of some rude but to the antiquary very interesting specimens of mural decoration on the northern side of the chancel vault (St. James' District Magazine). The vault of the chancel is divided into two bays by a flat rib rising from corbels rudely moulded, and on this rib is depicted the figure of an ecclesiastic in a long black or dark blue gown with a white, close-fitting cowl and tippet, and a sort of scarf hanging over the right shoulder as low as the bend of the arm. The scarf is coloured red, and may perhaps be intended to represent blood. The right hand holds a flagon coloured yellow, and the left a chalice coloured red. Across the neck is laid an axe, the handle of which is yellow and the head dark blue tinged towards the edge with red. The face of the figure is turned to the left, that is, looking eastward. It is evidently meant for the representation of some martyr, perhaps St. Thomas of Canterbury, the memory of whose death, if the date (1203) assigned to the consecration of the church be correct, must have been still fresh. Between this figure and the eastern wall of the Church is a painting of our Lord at table with his disciples. It is probably intended for the Last Supper, but it is mixed up with the history of the anointing of Jesus' feet by Mary—the figure of a female with long yellow hair lying at the feet of the Saviour being distinctly visible. The third painting, which is westward of the vaulting rib, between that and the tower, represents the subject, so common in medieval churches, known as "*le Fabliau des trois morts et des trois vifs.*" Three knights on horseback with hawks on their hands are confronted in a wood, represented by a single tree, by three skeletons in various stages of decomposition. The drawing of all these figures is very rude, and the only colours employed are black for the outlines and parts of the dresses, red and yellow ochre, and a very dark blue scarcely distinguishable from black. At the time of the discovery I sent drawings to the late Colonel Charles Hamilton Smith, F.S.A., a competent authority on ancient costume, who pronounced the dress of the knights to be that of the first

quarter of the thirteenth century, a date which coincides in a remarkable manner with that assigned to the building, or at least to the consecration of the Church." (Proceedings of the Society of Antiquaries, January 30, 1879.)

I cannot agree with my old friend in identifying the central figure with S. Thomas à Becket. The costume is not like that of a bishop, nor can I imagine his carrying a chalice and flagon when performing his evening devotions in his cathedral. I am not sure when S. Thomas was first venerated as a Saint in Normandy, but it could hardly be so soon as thirty-three years after his death. It would be interesting to obtain an opinion from a modern authority as to whether Colonel C. H. Smith was correct in the date he assigned to the dresses of the knights, which I think may be questioned.

Sir Edgar draws attention to three large flat stones to the north-west of the Church, at a spot where the feudal court of the *Fief Lihou*, a dependency of the *Fief Saint Michel* was held within living memory. Close by these stones stands a very curious stone which was found under the floor in the north chancel in 1878. "It has all the appearance of a natural boulder somewhat fashioned by art, and cannot be described better than by saying that it is in shape like a mummy case, the back being rounded and slightly curved and the front nearly flat, with the exception of two projecting breasts, which seem to indicate that it was intended to represent a female." This figure greatly resembles that which now serves as a gate-post in the churchyard of S. Martin's. I have little doubt that Sir Edgar MacCulloch was right in thinking that these stones were ancient idols, and that "both churches may have been built on spots which had been previously set apart as places of heathen worship."

In 1337 one Guillaume de Gaillard was nominated by Sir Thomas de Ferrars to the rectory of the Castel, then vacant by the death of Sir Thomas Fretard. For some reason, perhaps because the Abbot of Mont-St-Michel claimed the patronage of the Church, the Bishop of Coutances did not accept de Gaillard, but instituted Jean Viket, a Norman priest, upon which the King ordered the revenues of the benefice to be sequestrated. In 1478 Thomas Henry or Harris was rector; he died in 1494 and was succeeded by Henry Mores, who resigned in 1496, and was followed by James Olivier, who was Dean in 1507 and died in 1509. In that year John Langlois became rector and still lived in 1538. Sir E. MacCulloch says that Richard Le Feivre was Rector in 1567, but this is a mistake due to a wrong reading of a

passage in the notebook of Jean Girard. Guillaume Pacquet or Parquet was rector as early as 1550 and at least as late as 1572. By that time the Huguenot discipline had been introduced into the Town and S. Martin's. The first Presbyterian minister of the Castel was Nicolas Effart in 1584; he left to go to Jersey and was succeeded in 1585 by Jean du Quesnel or Chesné, who retired to Flanders. In 1590 Jacques Roullées had charge, and in 1597 Jérémie Valpy. In 1605 there was no settled minister but Pierre Painsec preached, and in 1606 Dominique Sicard, of S. Martin's, officiated. Pierre Painsec returned and was more or less responsible for the services till 1629. In 1647 Thomas Le Marchant was Pasteur. In 1655 the rector was Charles de la Marche, a man of great learning and attainments. He was sent by Cromwell with Sir Bulstrode Whitelocke on a mission to Sweden in 1653 and 1656, and resigned the living in 1662 on the re-establishment of Episcopacy. In 1657 a new pulpit was erected and the "table" which had been in front of the pulpit was removed to the north side of the Church. In 1662 Dr. Pierre Salomon, probably a French priest, became rector, and was succeeded in 1673 by Jacques Guille, who died in 1686. He was followed by Jacques de Brissac, Sieur des Loges, who died in 1689, from which date till 1729 Moïse Faudrier was rector. Isaac Babault, a connection of Mrs. Barbauld, held the living till his death in 1752, and in that year was succeeded by Jean Métivier. In 1758 André Migault was transferred to the Castel from Torteval. He resigned in 1784 to go to S. Saviour's, where he died in 1797. In 1784 Nicholas Peter Dobrée was appointed and resigned in 1832. Havilland Durand held the living from 1832 to 1843, James Maingy or Mainguy till 1860, Frederick Charles Carey till 1876, then Osmond Carey, Frederick William Mann and Peter T. Mignot.

From ancient records at Coutances and St. Lô, I have gathered some interesting facts relating to the history of the Castel parish. In 1251, the Abbot of Mont-St-Michel received all the tithes, amounting to £300 tournois, together with half the burial offerings. The Rector took the rest, amounting to £40. These figures shew that the Castel was the richest parish in Guernsey, for the tithes of S. Peter-Port were worth only £50, S. Andrew's £40, S. Peter's £90, and the Vale £60. In 1309, the Abbot sold certain lands, rentes, &c., and a field called *De Contente Change* or *Neuf Clos* to Peter de Garis, clerk, a merchant of Gascony, for a yearly rent of 60 sols tournois. As P. de Garis' children are

mentioned, it is to be presumed that he was in minor orders only. This contract probably fixes the exact date at which the ancient family of de Garis first came to Guernsey: it is hardly necessary to say that the lists of names in the *Dédicace des Eglises* are purely fictitious. In 1314 the accounts of the Vale Priory shew a payment of seven livres for repairs of the churches of the Castel and the Vale. In 1368 an arrangement was made by which the Prior of the Vale agreed to pay to the Treasurers of the Castel church a yearly rente of £4 10s. tournois, being thereby discharged from the duty of providing for repairs, books, vestments and lights. In 1515, Jean Girard bequeathed his best breviary to the church of *Notre Dame du Castel*, and also an *angelot*, a gold coin worth about eight shillings, "to help towards the building of the chapel of S. Barbara, and for S. Catherine in equal portions, which is in augmentation of the said church." In 1517 a *Frérie du Crucifix* is mentioned, and in 1569 there was a *Chapelle* de Notre Dame de Pitié in the church. The deed of foundation of Elizabeth College shews that its endowment was chiefly taken from the confiscated revenues of confraternities connected with the churches of the Island. Among those named are the *Frérie de Jésus de Notre Dame du Cattell, Notre Dame de Pitié du Cattell* and the Mass of *Notre Dame du Dimanche du Cattell.*

The ancient chapel of S. George, which gives its name to an estate in the parish, is mentioned in the papal Bull of 1155. In 1719 the chapel, which had previously been given to the Rector and Churchwardens to serve as a school-house, was restored to Mr. John Guille, of S. George, on condition of his keeping it in repair for the use of the Court of the *Fief le Comte*, which by ancient custom held its sittings in the chapel. A later Seigneur pulled down the building in order to put an end to a long standing claim of a right of way to the chapel and well of S. George. A chapel of S. Germain stood to the north of S. George, and a chapel of S. Anne may have existed in the locality of that name near the King's Mills.

DIGEST OF THE

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